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INFARCTS OF THE KIDNEY

CHAIRMAN'S ADDRESS

J. DELLINGER BARNEY, M.D.
AND
E. ROSS MINTZ, M.D.
BOSTON

This investigation was inspired primarily by case 1. As the work progressed, it was surprising to find that the subject of infarction of the kidney has been relatively neglected. The literature is comparatively scanty; textbooks for the most part mention the subject but briefly, and many clinicians fail even to include it in the list of possible diagnoses. At the Massachusetts General Hospital this diagnosis occurs only ten or twelve times in the clinical catalogue. On investigation, none of these cases were proved by operation or at autopsy.

REPORT OF CASES

CASE 1.—*History.*—A woman, aged 31, was admitted to the Massachusetts General Hospital on Sept. 22, 1931, with phlebitis of the left leg of three weeks' duration and severe pain in the right flank of seven days' duration.

In 1921, 1923 and 1925 the patient was delivered of a premature infant each at seven months. There was a history of albumin in the urine through the pregnancies but it always disappeared after delivery. Following the last confinement she had phlebitis of both legs and this had recurred repeatedly ever since, first on one side and then on the other. In the interval the patient felt well and kept at her work as a stenographer. About a month before entrance she noticed a moderate degree of phlebitis in the left leg. Three weeks before entrance she noticed a dull, persistent pain in the right loin, which gradually increased in intensity up to about forty-eight hours before entrance, when it became extremely severe, requiring much morphine for its relief. There were no chills but there was a slight elevation of temperature. There was no nausea or vomiting and there were no urinary symptoms. Her local physician said later that the temperature had been about 99 F. up to the time of entry, that she had a rapid pulse and that the urine was full of pus.

Examination.—The patient was well developed and well nourished and apparently was in extreme pain. Examination of the chest gave negative results. The blood pressure was 150 systolic, 80 diastolic. The temperature was 102.4 F., the pulse rate 140 and respiration 28. The white blood count was 22,600. The red blood count was about 3,000,000. Hemoglobin was 50 per cent. Blood nitrogen was 40 mg. The urine contained a large trace of albumin with a few white blood cells and many red blood cells in the sediment.

The abdomen was full and the whole right side from the costovertebral angle and costal margin to the symphysis was extremely tender, most so in the upper quadrant. There was boardlike rigidity of the muscles; perhaps on account of this, no mass could be felt, but the impression was of a mass in the region of the right kidney. Pelvic examination showed marked tenderness in the right vault but no definite mass. As the picture suggested a pathologic condition either in or around the kidney, an acute appendicitis of the retrocecal variety or some other acute abdominal condition, a surgeon was asked to see the patient in consultation. His opinion and ours was that the condition was probably due to perinephric abscess. It was decided to wait for a time for further study and for possible improvement of the patient's condition. She was kept comfortable with morphine and given intravenous injections of dextrose solution. A roentgenogram, taken with a portable machine with the possibility of finding renal or ureteral calculi, was unsatisfactory.

Treatment and Result.—No improvement had taken place after forty-eight hours. During this time the patient voided from 40 to 50 ounces (from 1,200 to 1,500 cc.) of urine daily. Cystoscopy was considered unwise, as the patient was too ill. Operation was performed under local procaine hydrochloride anesthesia with a preoperative diagnosis of "perinephric abscess." The tissues immediately surrounding the kidney appeared to be slightly edematous but the kidney itself seemed firm, adherent and about half again its normal size. Careful exploration around the kidney revealed no evidence of free pus. Partial decapsulation of the kidney showed the cortex to be of a dull red color and of a peculiar "dead appearance." Stripping the capsule caused no bleeding, nor did a slight tear of the cortex made accidentally by the lip of the retractor. A piece of the cortex was removed for biopsy. The wound was drained with a rubber tissue wick and closed in layers. In view of the condition found, the postoperative diagnosis was "infarct of the kidney," but it is fair to say that this diagnosis had never been considered.

Examination of the biopsy specimen by Dr. H. F. Hartwell showed acute and complete degeneration of the tubules and glomeruli, the condition being comparable to that seen in acute mercurial poisoning.

The patient improved and was mostly free from pain for several days after operation. The temperature then again rose and her progress became unsatisfactory. Meantime examination of the chest by Dr. C. M. Jones showed collapse of the right lung. Operation was then considered necessary and a nephrectomy was performed under gas-oxygen anesthesia. An intracapsular enucleation was done, as it seemed to be the quickest and easiest procedure under the circumstances. The kidney was about the same size as before. When the pedicle was cut across, no blood escaped from the kidney. Ligation of the vessels was done in the usual manner, but as it developed later neither clamps nor ligatures were necessary. While the kidney was being freed, the pleura was accidentally opened. This rent was immediately closed by suture.

A careful study of the kidney was made by Dr. Tracy Mallory. This showed infarctions of the entire vascular structure of the kidney, both arterial and venous, with complete degeneration of practically all its tubules and glomeruli. At the time of the operation the kidney was of a dull, brick red color with lighter and darker mottlings and looked like, as it actually was, dead tissue.

From the Urological and Pathological departments, Massachusetts General Hospital.

Read before the Section on Urology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

Owing to lack of space, this article is abbreviated here. The complete article appears in the authors' reprints.

Marked dyspnea and rapid respiration, which followed the operation, caused the patient much distress, and examination showed an extensive pneumothorax on the right side. About 2,500 cc. of air was aspirated on three occasions during the next twelve hours, with some relief of the respiratory symptoms. Bronchopneumonia and empyema (confirmed roentgenographically) soon developed, and after a great deal of discomfort the patient died ten days after operation.

Autopsy.—This showed a normal heart, normal left kidney and normal left lung. There was bronchopneumonia on the right side and also a large empyema cavity, the latter being above the lower lobe and entirely walled off from that portion of the pleura situated immediately above the diaphragm, this being smooth and normal. It would appear, therefore, that the empyema did not result from the accidental opening of the pleura and may have arisen from the trauma of the aspirations. The extent of thrombosis of the blood vessels formed the most interesting feature of this autopsy. These thromboses involved the vessels of both legs, the iliac arteries and the vena cava up to the point of entrance into it of the left renal vein. The vessels of the pelvis were mostly thrombosed, the right ovarian and right renal veins being completely occluded. On account of this extensive vascular damage, especially of the

Fig. 1 (case 1).—Section of totally infarcted kidney removed.

vena cava, the circulation of the lower extremities and of the pelvis was being carried on chiefly by way of the left ovarian vein, which was found to be dilated almost to the size of one's thumb. The thromboses found in the vessels enumerated were of such long standing that they were canalized in many places and attached to the lumens of the vessels by strong fibrous bands. The thromboses themselves seemed to be composed of firm, fibrous tissue.

Bacteriologic Examination.—In the blood from the right side of the heart, no organisms were found on culture; in that from the left side, Streptococcus viridans was found. No organisms were found in a culture from the wound. The culture from the right external iliac vein showed no growth. A culture from the empyema on the right showed hemolytic streptococcus.

CASE 2.—*History.*—A woman, aged 29, was admitted to the hospital on May 23, 1900. Four days previously she had had a cold with a chill, followed by pain in the right side of the chest. She vomited four or five times. Hemoptysis, cough and dyspnea were present. The temperature was 103 F; the pulse rate, 110; the respiratory rate, 28. The abdomen was normal. The urine showed a few leukocytes. The temperature, pulse and respiration dropped to normal and remained so for thirteen days, when the temperature assumed an intermittent character.

The patient was again seized with a sudden pain in the right side of the chest with a chill, the temperature rising to 104 F.

Ten days after the onset of this pain in the chest, the patient was seized with a sudden, sharp pain in the right loin, which became tender and rigid. The surgeon who saw her thought that she had either appendicitis or disease of the gallbladder.

The next day the patient still complained of pain, and vomited once. The right side of the abdomen was rigid and tender, and the lumbar and hypochondriac regions were involved. Pelvic examination gave negative results. The white count was 22,800.

Operation and Course.—A laparotomy was performed. Nothing abnormal was found excepting a rather large right kidney.

After operation, the urine contained a few red and white cells.

The patient died nine days after operation, having failed steadily. A diagnosis was not made before death.

Autopsy.—This showed ulcerative endocarditis involving the aortic valve, purulent meningitis and parenchymatous hemorrhage in the lungs. The left kidney was normal. The right kidney was completely infarcted.

CASE 3.—*History.*—A woman, aged 35, was admitted to the hospital on Jan. 20, 1910, complaining of weakness and dyspnea. The urine showed, at times, a few red cells and always a moderate number of white cells. There was no costovertebral tenderness and no pain in either loin.

Shortly after admission edema and gangrene of the legs were noted. Perhaps because of the fact that the patient soon became irrational no objective or subjective symptoms were obtained pointing to the kidney. Also, the condition of the chest obscured the picture to a certain extent.

Autopsy revealed infarction of the right kidney forming about a fifth of its volume. The left kidney was almost completely infarcted. Culture of the heart's blood showed streptococci.

Bacteriologic Report: A culture of the heart blood showed a moderate number of scattered small, round, raised, white colonies—streptococci.

CASE 4.—*History.*—A man, aged 65, was admitted to the hospital on May 7, 1912, complaining of polyuria and dyspnea of six months' duration. Six weeks previously aphasia with right hemplegia had developed while he was asleep. This disappeared in a few days. He was seen and treated by a local physician for three weeks, with improvement.

A week prior to admission, generalized edema and anorexia with nausea and vomiting occurred.

The patient was admitted to the hospital in a state of profound uremia with generalized edema, with marked improvement under treatment.

Seventeen days after entry the patient had considerable pain with localized spasm and tenderness in the right lower quadrant, but there was no costovertebral tenderness and no masses could be felt. The urine was essentially negative. The pain was constant and severe and was not relieved by morphine. A tentative diagnosis of thrombosis of the mesenteric or renal vessels was made. The patient gradually failed and died five days later. Before death, the temperature rose to 103 F., and the urinary output diminished gradually.

Autopsy.—Multiple infarcts of varying size were found in the left kidney. The right kidney was almost totally infarcted.

Bacteriologic Report: A culture of the heart blood showed no growth.

CASE 5.—*History.*—A man, whose age was not recorded, entered the hospital on Dec. 12, 1900. He was taken to the emergency ward on Dec. 15, 1900, with a history of having fallen off a slowly moving car with injury to the head and back. When admitted the patient was in a state of shock and was practically pulseless. Two ounces (60 cc.) of bloody urine was withdrawn from the bladder, and there was a slight dulness in the right flank. A tentative diagnosis of rupture of the kidney was made.

The patient died eight days later. At autopsy a large infarct of the right kidney was found. All the vessels of the left kidney were thrombosed.

According to various authors, Traube,[1] writing in 1856, is credited with the report of the first proved case of infarct of the kidney. From then until 1922 several cases, singly or in groups of two or three, were described by various observers.

In 1922, there appeared a splendid article by Aschner [2] of New York, in which he collected from the literature and discussed in detail a group of sixteen cases. To these Aschner added the cases of two patients who were admitted to the Mount Sinai Hospital in New York, one of whom was not operated on, and therefore the case is open to question as to the correct diagnosis.

In 1924, Falci,[3] working in Marion's clinic, collected twenty-two cases from the literature and discussed the subject at great length. Danhiez,[4] also working in Marion's clinic, reported four more cases in 1927, one of which occurred in Marion's service. These three authors, as well as many of the other reporters, have gone so thoroughly into the subject of infarction of the kidney from the point of view of pathogenesis, pathologic anatomy, symptomatology and treatment that it seems difficult to add much of value to what they have already said. On the other hand, no one has, so far as we are aware, collected and analyzed any large group of cases seen at autopsy, and we have felt that such a study would add not a little to the existing knowledge of the subject, as well as enable us to arrive at certain conclusions as to diagnosis.

Accordingly, we have gone over the autopsy records at the Massachusetts General Hospital and have found 143 cases which we have studied in detail.

One might say, and indeed it is a fact, that infarcts of the kidney come more often under the eye of the internist than that of the surgeon or the urologist. Of this series, 117 patients, or 83 per cent, were admitted to the medical wards and only 22 to the surgical service. Of the latter, 6 were admitted with gangrene of one or both legs, and amputation was performed; 9 had a more or less acute abdominal condition; 3 came because of cancer, and 3 others for empyema.

Almost all of those admitted to the medical service were found to have acute or chronic heart disease, many with decompensation; others had marked arteriosclerosis as the chief cause of their illness. It is also a fact that arteriosclerosis lay at the bottom of the fatal ending of many of those entering the surgical service.

Fifty-seven and five-tenths per cent of the cases of infarct occurred in males.

Somewhat to our surprise, we have found all ages included in this series. The youngest patient was a 6 year old boy, the oldest a man of 77. The great majority, however, were between 30 and 50 years of age; 24 + per cent occurred from 30 to 40 and 19 + per cent, from 40 to 50. In other words, infarcts of the kidney are most commonly seen at about the prime of life.

Infarct of the kidney does not necesarily produce pyrexia, as 68 per cent of our cases were afebrile. Also, it may be fairly said that when fever is present it may well be quite as often due to the lesion giving rise to the infarct, or to some intercurrent or terminal infection, as to the infarct itself.

One is not greatly aided by urinalysis. In something over 38 per cent of this series, the urine was persistently negative. In the eighty cases (61 per cent) in which the urine was not normal, it was often doubtful whether the presence of infarction of the kidney accounted for the pathologic condition found. In the first place, few of the specimens were obtained by catheter, and it is well known, of course, that without this procedure, especially in women, pus, blood or both may be found to a greater or lesser extent. Furthermore, many of the reports mentioned a "few" white or red cells, and sometimes both. In four cases, however, there was a definite statement of gross hematuria, and in these instances it would seem as if the infarct was responsible for the blood.

Few patients, in fact only 10 or 9 per cent, complained of urinary symptoms, such as frequency, difficulty or dysuria. As a matter of fact, four of the ten were those who were mentioned as having hematuria. The remaining 116, or 91 per cent, had no urinary complaints whatever.

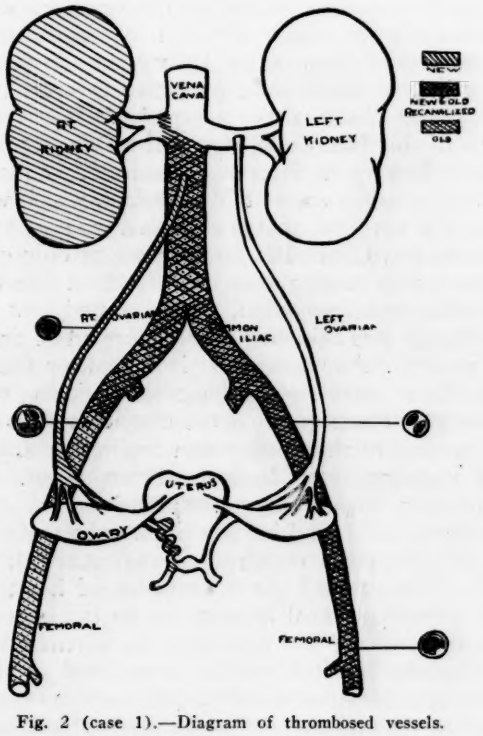

Fig. 2 (case 1).—Diagram of thrombosed vessels.

Nausea and vomiting are often an accompaniment of a kidney lesion, but seem to be extremely rare in cases of infarction. Here it was noted in only a little over 8 per cent. This small figure is even more surprising when we consider that many of the patients had other conditions in the abdomen or elsewhere which might well give rise to gastro-intestinal disturbances. In this connection we may say that no case was admitted with or gave a history of persistent or excessive diarrhea, or of dysentery. We mention this fact because Oppenheim [5] and also Virchow [6] gave these intestinal disturbances prominence among the causes of renal infarction.

As many writers lay great stress on the symptoms of pain and tenderness and on their importance in the diagnosis of infarct of the kidney, we have studied this point rather carefully. In eighty-eight cases, or 64.7 per cent, the histories mentioned no pain or tenderness of any sort or at any time. This fact we consider

1. Traube: Ueber den Zusammenhang von Herz- und Nieren-Krankheiten, Berlin, A. Hirschwald, 1856.
2. Aschner, P. W.: Am. J. M. Sc. **164**: 386 (Sept.) 1922.
3. Falci, E.: J. d'urol. **18**: 449 (Dec.) 1924.
4. Danhiez, P.: J. d'urol. **23**: 481 (June) 1927.
5. Oppenheim, F.: Ztschr. f. Kinderh. **26**: 192 (Aug.) 1920.
6. Virchow, cited by Falci.[3]

to be most important. While it is true that they were present to a greater or lesser degree in the five cases of total infarction of the kidney already reported, they were entirely lacking in a great many wherein there were multiple infarcts, some of large size, in one or both kidneys. From a study of our material we believe that when present they are probably due either to a sudden and marked increase of intracapsular tension or to infection, or to both factors. In fact, it is easier to account for their presence than for their absence.

Careful study was made of the forty-six cases in which there were pain and tenderness to a greater or lesser degree. In no case was there noted the costovertebral tenderness which we are accustomed to associate with renal disease. Furthermore, of the forty-six cases, the symptoms could reasonably be ascribed to the conditions in the kidney in only thirty-seven. But even among these there were unquestionably many whose pain or tenderness was quite as probably due to other conditions, abdominal or thoracic, as to the kidney lesion itself. We can say, therefore, that while total infarction of the kidney may be associated with pain and tenderness, extensive infarcts may be entirely free from these symptoms. We feel that because of this fact, the difficulty of making a preoperative or antemortem diagnosis is enormously increased. This may possibly account for the fact, which we confess was a surprise, that the clinical catalogue of the Massachusetts General Hospital contains only eight or ten cases with a diagnosis of infarct of the kidney. However, on investigation, it was found that in not one instance was this diagnosis confirmed at operation or at autopsy. As we consider it difficult or sometimes impossible to make such a diagnosis clinically, we cannot accept without question the diagnoses so recorded.

In turning to the postmortem findings, many interesting and important facts are brought out. In the first place, a normal heart, including the myocardium and valves, was found in only 6 (4.4 per cent) of 136 cases in which the observation was recorded. Other writers have stressed the prominence of heart lesions in the picture of renal infarct, but so far as we know the point has not hitherto been so forcibly brought out. Equally forceful, on the other hand, is the fact that in 130 cases, or about 95 per cent, the heart and its valves showed changes of greater or lesser extent. In ninety-two of this group (67.6 per cent) the lesions were of long standing, associated in a great many cases with arteriosclerotic changes. In thirty-eight, or 27 + per cent, the lesions in the heart were acute or acute associated with chronic conditions. Endocarditis, therefore, of either the acute or the chronic type, generally associated with hypertrophy and dilatation, may be truly said to be the most prominent accompaniment of, or more accurately the most important factor in, the production of renal infarcts. Nor does this condition of the heart confine itself to any particular age or sex. In the more youthful patients the ulcerative, vegetative or so-called "malignant" type of endocarditis seems to predominate; in the adult, especially the aged, the chronic type is more often found. However, even in these cases the records show with amazing frequency that with this there was frequently associated the same acute lesion as was found in the younger patients. With this tremendous percentage of cardiac lesions, is it any wonder that the vast majority of patients are seen by the internist rather than by the surgeon or the urologist?

There is no question in our minds that the pathologic conditions found in the heart, together with more generalized changes, such as arteriosclerosis and sepsis, are responsible for the production of renal infarcts. Just what factor precipitates the chain of events leading to this renal catastrophe we are unable to say, nor do we find any logical or conclusive explanation of it in the communications of other authors. But we shall take up this point later in the paper. We wish, however, to show that although the kidney is most frequently affected by infarction, certain other organs are often similarly involved. We refer to the spleen and the lungs.

In the spleen, some small infarcts were found, but others of remarkable size were found in 55 per cent. In some there was evidence of infection, as shown by the presence of necrosis or abscess formation. In one case general peritonitis ensued from the perforation of a splenic abscess, originating in an infarct, into the peritoneal cavity.

Pathologic conditions were found in the lungs in seventy-one cases, or 55 per cent. Of these, infarctions were most frequent, there being thirty-four, or 26.9 per cent, with pneumonia (lobar pneumonia or bronchopneumonia) next in order with seventeen cases. Abscesses, pulmonary emboli, hydrothorax and empyema were observed in several instances in one or another combination with the infarction.

The liver is recorded as being the seat of infarct in but one case. In such cases, however, the large size of the organ would perhaps make it easy for small infarcts at least to escape observation, unless by chance the pathologist took pains to make serial sections.

Infarcts were found twice in the brain, but we believe that this figure, like that in the case of the liver, is probably misleading for the reason that the brain was examined in comparatively few cases.

Coming now to the organ which most concerns us, namely, the kidney, we find that both organs were the seat of infarcts in seventy-seven cases, or 54.2 per cent, three of these being included among the five cases of total infarct already reported.

The number of infarcts varied from one to "many" or "multiple," and their size from "small" to "large." In several instances, the infarct was said to occupy "one half," "one third" or even "two thirds" of the kidney area; in others, measurements of the infarct were made, these varying from 7.5 by 4 cm. down 1 or 2 cm. in diameter. It is obvious, therefore, that the pathologic picture is one of great variety. Also, in nine cases (this comment applying also to the instances in which only one kidney was involved) it was said that old as well as recent infarcts were found.

This evidence, although somewhat scanty, bears out the belief that we hold with others, that a certain amount of infarction may occur without symptoms and with eventual recovery by cicatrization.

Our study of the kidneys in this series showed that infarction may occur on only one side in 45.7 per cent. When the side was mentioned, it was shared about equally by the right and the left.

It is interesting, and perhaps worth noting, that one case occurred in a horseshoe kidney which was described as containing "many small" infarcts.

We were curious to see to what extent the vascular system was itself affected by thromboses or emboli It was our feeling, judging from the literature and from our own scanty observations, that the venous

system would be affected more frequently than the arterial system. However, the facts are quite the contrary. An analysis of all the cases in which diseases of the vascular system (excluding the heart) were recorded shows that arteries were involved sixty-nine times and veins nineteen times, in many instances, of course, both arteries and veins being more or less occluded. As might be expected, the renal arteries, one or both, were the more frequently affected, seventeen times as compared with four times in the case of the renal veins. Next in order came the common and external iliac arteries and veins, with ten for the former and nine for the latter. In third position came the femoral vessels. The abdominal aorta was thrombosed nine times and the inferior vena cava in only three instances. Thromboses of the mesenteric (usually the superior) artery were noted four times and of the splenic artery thrice. In three cases it was found that the hepatic artery was occluded with a similar condition in the axillary, brachial, hypogastric and tibial arteries, each in one instance. The entire portal system was thrombosed in one case. The pulmonary artery was found to contain emboli in ten cases and has been placed rather in a class by itself.

It seems to us that a striking feature of this investigation is the bizarre choice of vessels, in most cases there being no demonstrable or conceivable explanation for the occurrence.

A more detailed examination of the accidents befalling the vascular system showed that in twenty-four patients one or more vessels, arterial or venous, were attacked; in seventeen others, only one vessel was involved.

Three cases are worth special mention. The first, in a woman of 41, there was a history of phlebitis complicating pregnancy four years before. The heart was normal; the heart blood showed "bacilli," and autopsy revealed thromboses of both renal arteries, the abdominal aorta, the ascending aorta, both common iliac arteries, both femoral veins, both common iliac veins, the mesenteric artery and the entire portal system. The patient entered the hospital because of abdominal pain; an exploratory laparotomy was performed, and gangrene of the intestine was found.

A second case showed almost equally extensive vascular lesions. This was in a man of 65 who was admitted to the hospital for gangrene of the leg. Mid-thigh amputation was done. Necropsy revealed thromboses of both renal arteries, the abdominal aorta, the right femoral vein, the right common iliac vein and the splenic and hepatic arteries. The blood culture was not recorded.

A third case concerned a man of 65 who had an amputation of the leg. There were thromboses of both renal arteries, the abdominal aorta, the right femoral artery, the right common iliac vein, the right femoral vein, the splenic artery and the hepatic artery. This case was almost identical with the previous one in regard to the variety and location of vascular lesions. Here again no record could be found of the blood culture. In both cases marked arteriosclerosis was noted.

It is interesting to observe that whereas there was a total of 143 renal infarcts, the renal arteries were thrombosed only 17 times and the renal veins but 4 times. In the presence of an occlusion, more or less complete, of either of these vessels, it is not difficult to see that infarction will take place. It is not so simple, however, to account for the infarction in these cases in which, so far as they can be or were traced, no obstruction of either the arterial or the venous circulation can be demonstrated. As the vessels of the kidney are terminal, it is easy to see how the occlusion of even a comparatively small vessel may do away with the circulation over a relatively large area of the kidney. In some instances, these vessels might well be seen on section, but in others only serial sections of the entire kidney would enable one to account for the existing conditions.

Finally, we wish to take up the matter of demonstrable infection in this series of cases. We say "demonstrable" because while its presence was noted in fifty-five, of 52.3 per cent, the cultures in fifty other cases, or 47.6 per cent, were recorded as sterile. As many of these cases date back ten, twenty or even thirty years, we feel sure that were they examined today, more precise bacteriologic methods would reveal organisms in a much larger number. It is also unfortunate that no record of cultural examination could be found in thirty-eight cases.

Streptococci, generally viridans, were the offending organisms in forty, or 72.7 per cent, of the positive cases, staphylococci coming next in ten instances, or 18.1 per cent. The great predominance of infections of the heart valves would seem, therefore, to coincide with the high incidence of streptococci.

Having assembled all possible facts from a careful study of 143 cases, what does it teach us? We hope that this investigation will throw light on both the diagnosis and the treatment of renal infarction, and we believe that it will. So far as prognosis is concerned, we do not feel much encouraged, as our study has shown conclusively that the outcome of any given case will depend quite as much on the underlying condition as on the presence or degree of infarction of the kidney, unless, indeed, both organs are extensively involved. We see no reason to suppose that even total infarction of one kidney should in and of itself endanger life, other conditions being equal. The fact of the matter is, however, that the odds are against the patient in the vast majority of cases, and if he escapes onslaught from one source, he will succumb to that from another.

So far as diagnosis is concerned, we are not sure that much light has been thrown on the question. To be sure, even in the absence of pain and tenderness more or less directly associated with the kidney, the presence of pus or blood or the occurrence of hematuria would naturally call attention to the kidney, and proper diagnostic measures would be instituted. These points might or might not throw light on the status of the kidney. As a matter of fact, the records show that cystoscopic study was done in but one instance. In this case bilateral renal hematuria was found, but necropsy showed only a small infarct in one kidney. In the event of total infarct, one would expect to find little or no urine from the affected side and a greatly decreased or absent function. This, together with the presence of pain and tenderness, which is to be expected in all such cases, would certainly suggest, if not clinch, the correct diagnosis. This would be even more true if there was definite evidence of an acute or even of a chronic endocarditis. So far as pyelography, retrograde or intravenous, is concerned, we do not feel that this would necessarily be helpful, although in the latter procedure one would expect to find a much decreased elimination of the iodide preparation. As we have had no experience in such cases, we confess that our comments are necessarily theoretical. There is no doubt in our minds,

therefore, that unless there is pain, tenderness or definite urinary disorder, it will often be impossible to make the diagnosis in many cases.

However, if and when a patient presents symptoms such as those described in our first case, one must immediately sharpen one's wits, for the picture may be most confusing. In case 1, certain features pointed strongly to an acutely inflamed appendix lying in a retroperitoneal position, with possible rupture or abscess. It was difficult, indeed, to be sure about this.

In the case of right-sided symptoms, one would naturally have to exclude in addition to appendicitis the usual list of acute abdominal or subdiaphragmatic conditions with which one is, of course, familiar. The same is true of those cases occurring on the left side. We confess that in case 1, although several diagnoses were considered, infarction of the kidney was not one of them. We feel that in any case in which renal disorder is probable the possibility of infarct should at least be considered.

At the risk of repetition we wish, in closing, to summarize some of the results of this investigation. We believe that this is important not only for the sake of clarity, but also in order to emphasize certain points.

From the purely clinical point of view, renal infarction may occur in either sex and at almost any age, but especially between the thirtieth and fiftieth year. It is most often not associated with fever, urinary symptoms, nausea and vomiting or pain, and the urine is normal or essentially so in well over one third of the cases. If pain and tenderness are present, they may be indicative of a complete infarction of the kidney. On the other hand, these symptoms may so closely simulate those associated with many other acute abdominal conditions that it may be extremely difficult or even impossible to differentiate the two. We feel that it is important to keep in mind at least the possibility of a renal infarct and to remember that this suspicion will be greatly strengthened if the patient is also suffering from endocarditis, especially of the chronic fibrous type with hypertrophy and dilatation of the heart and extensive arteriosclerosis. It is also well to remember that almost any severe type of septicemia may give rise to infarcts.

It has been shown that vessels other than those supplying the kidney are not infrequently the seat of thrombi, and that in many cases a number of different portions of the vascular system may be simultaneously involved.

This study warrants the opinion that no rule can be laid down as to definite diagnostic symptoms, except to say that in many instances a complete lack of symptoms and signs pointing to the kidney may make it impossible to detect renal infarcts. That many may occur without symptoms and recover spontaneously is well shown by certain cases in this series and by the observations of others.

We also believe that it is impossible to formulate any reliable prognostic rules. As we already have remarked, it is not the renal infarction per se that kills; it is rather the endocarditis, arteriosclerosis, sepsis or phlebitis which determines not only the infarct, but even the outcome itself. In giving a prognosis, one must, therefore, keep this most important point in mind. And by the same token one must also remember that even an apparently small degree of endocarditis or of sepsis may result as disastrously as one of a more pronounced character. Generally speaking, we can say that any patient who has the conditions favorable for the formation of infarcts of the kidney has a poor outlook.

What has been said about prognosis applies equally well to treatment. No rule can be laid down. If one is sure of one's diagnosis of renal infarction, nephrectomy may be advisable or even necessary. The infarct that cannot be diagnosed during life will probably take care of itself. Much more important is the treatment of those conditions which favor the formation of infarcts and which we have already discussed at some length. But here, also, most of these conditions are of a chronic and generally incurable character, and therefore treatment is as difficult and unavailing as an opinion of prognosis is to formulate.

THE MATERNITY WARD OF THE GENERAL HOSPITAL

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FOREWORD

BY DR. DELEE

A decent respect for the two editorials[1] in THE JOURNAL and the resolutions of the Chicago and the Illinois State medical societies would be sufficient reason for presenting this rather voluminous paper, if the importance of the matter concerned did not command it.

In 1926 and again in 1927, attention was called[2] to the prevalence of puerperal infections in the maternity wards of general hospitals, and both architectural and administrative isolation of infected cases was recommended. In 1932, the *Ladies' Home Journal* printed a popular life of Semmelweis by de Kruif[3] in which the Lying-in Hospital and my convictions were mentioned and which elicited the editorials and resolutions referred to. This article is my reply.

In order to present to the profession a perfectly unbiased view of the situation, I asked Dr. Heinz Siedentopf to study the literature and write a paper for me on his objective observations. Dr. Siedentopf is privatdozent in Professor Sellheim's clinic in the University of Leipzig and is spending an exchange year at the University of Chicago. He was more than unprejudiced; he was of the opposite opinion to mine when he started his investigations, and his study has convinced him of the correctness of my position. I do not have to assume responsibility for any of the statements (except those citations from my own articles) which he culled from the literature. Exact references are in every instance supplied.

THE FACTS

BY DR. SIEDENTOPF

The science and art of obstetrics are undergoing many marked changes during the present time. The last few years brought about valuable improvements: the perfection of prenatal care, the development of

1. "Saver of Mothers," editorial, J. A. M. A. **98**: 891 (March 12) 1932; Obstetric Mortality, ibid. **98**: 1378 (April 16) 1932.
2. De Lee, J. B.: The Maternity Ward of the General Hospital, Modern Hospital Year Book, ed. 6, 1926; What Are the Special Needs of the Modern Maternity, Mod. Hosp. **28**: 59 (March) 1927; How Should the Maternity be Isolated, ibid. **29**: 65 (Sept.) 1927.
3. de Kruif, Paul: Ladies' Home Journal, March, 1932.

pain-relieving methods during labor, the better management of cesarean section.

Another remarkable change is the increasing use by the public of hospitals for deliveries. This is noticeable in Europe as well as in this country. Polak,[4] in his report for Subcommittee II of the White House Conference on Child Health and Protection, mentions it, and Ehrenfest,[5] in the same conference, reported that in the ten largest cities hospitalization now ranges between 56 and 85 per cent of all live births. The majority of births, however, still take place at home, 1,500,000 out of the 2,200,000 annually.

Jessen,[6] in his article on fifty years of puerperal fever in Basel, reports that, in 1868, 5.1 per cent of all deliveries in the canton of Basel-Stadt were performed in the hospital. In 1896, when a hospital was built, 29.8 per cent of all parturient women came to the hospital. In 1928, 75 per cent of all deliveries of the county were performed in the one city hospital.

Hanauer[7] states that in Frankfort, Germany, in 1930, 75 per cent of all deliveries of the city were performed in hospitals.

As the result of this development, more and larger hospital opportunities for deliveries are being created all over the world. After the war, in Germany, the number of private maternity hospitals was tripled and that of the public maternity hospitals almost doubled. The number of all maternity hospitals was 94 in 1902, 217 in 1918, and 288 in 1928.

The question arises: Have these recent changes in the practice of obstetrics resulted in better welfare of mother and child, less loss of life, greater protection of health? One glance at the mortality statistics all over the world reveals that it has not. During the past years maternal mortality in many countries has increased, even if one excludes the cases of death after abortion.

Bland[8] writes:

> The trend in morbidity and mortality, according to the most recent report of the Children's Bureau, is not in the line of improvement, but rather on the decline. In 1915, the death rate from all puerperal causes was 6.1 per thousand live births, and in 1925 the rate is recorded as 6.5 per thousand.

He furthermore quotes from the 1927 report of the British Ministry of Health:

> There is no reduction to report in the actual mortality rate in childbirth (from 1901 to 1926) and there is no evidence of decreased invalidity subsequently. It must be confessed that the situation is obscure and perplexing. It is cause for regret, and indeed for some concern, that there appears as yet little or no improvement in this matter. For some years past public and private endeavor has addressed itself to the issue without encouraging reward.

De Snoo[9] of Utrecht writes:

> In Berlin, in 1923, it was 3.55 per thousand; in 1924, 2.76 per thousand, and in 1929, 5.5 per thousand. In England also there was an upward trend. In Holland the mortality is 2.6 to 3 per thousand. This high mortality rate of mothers and children has become alarming during the last years, and efforts have been made almost everywhere, but especially in England, America and Germany, to find the cause.

Browne[10] of London writes the following:

> The annual report for 1930 of the chief medical officer of the Ministry of Health shows: in 1911 the total puerperal mortality was 3.87 per thousand live births; in 1930 it was 4.40. From puerperal sepsis the death rate in 1911 was 1.43 per thousand. In 1930 it was 1.92. That the mortality from eclampsia has not declined is shown by a study of the returns of the Registrar-General.

The British Committee on Maternal Mortality and Morbidity[10a] in 1932 made a table from the official returns from Stockholm, which shows that the average maternal death rate per thousand live births for the ten years 1921-1930 was 5.1 (sepsis, 3.8; other causes, 1.3); and for the year 1930 it was 8.6 (sepsis, 7.2; other causes, 1.4). Moreover, it shows a very decided rise in the last five years.

Polak writes that, in contrast to the reduction of female mortality, the result of preventive medicine in the last fifty years, the mortality from conditions incident to pregnancy and childbirth in England, Wales and the United States has shown very little decline, and the mortality from sepsis has remained stationary for the last fifteen years.

In a report on maternal mortality in New York, DePorte[11] writes:

> The average annual death rate in 1915-1920, exclusive of 1918 (the year of the great influenza epidemic when mortality from puerperal causes was abnormally high), was 56.8 per ten thousand total births; the average annual rate in 1921-1925 was exactly the same—56.8. Thus the situation in the state during the two successive five-year intervals did not change at all.

Comparing maternal mortality with the other causes of death, DePorte says:

> It is because of this added hazard that the death rates among married women under 35 years are higher than among either single women or married men of the same age.

Thus, the profession of being a mother today is more dangerous than the average masculine profession, with all its risks.

Furthermore, the increasing preference of the hospital as a place of delivery, one of the most marked changes that has taken place during the last few years and is growing, seems not only not to have bettered the results but seems actually to have made them worse. Not a few authors state that this development is increasing the maternal mortality and morbidity, as is shown by the following excerpts from the literature.

A very startling paper was published for the Scottish Board of Health by Kinloch, Smith and Stephen[12] in 1928. It dealt with the investigation of 252 maternal deaths that occurred during the ten years from 1918 to 1927 in Aberdeen. They viewed their results with consternation:

> The comparative maternal death rates from all causes and for the separate causes of death in the practices of doctor, midwife and institution have been analyzed, the factor of selection being eliminated by transferring the cases back to the original doctor or midwife in charge of the case, and it has been found that the death rate per thousand maternity cases is 2.8 in the practice of the midwives, 6.9 in the practice of doctors and 14.9 in inpatient institutional practice. . . .

4. Polak, J. O.: Maternal and Early Infant Care, Am. J. Obst. & Gynec. **21**: 852 (June) 1931.
5. Ehrenfest, Hugo: Factors and Causes of Fetal, Newly Born, and Maternal Morbidity and Mortality, Am. J. Obst. & Gynec. **21**: 867 (June) 1931.
6. Jessen, E.: Fünfzig Jahre Kindbettfieber in Basel, 1876-1925, Schweiz. med. Wchnschr. **59**: 1104 (Nov. 2) 1929.
7. Hanauer: Statistik der Entbundungsanstalten, Arch. f. Gynäk. **149**: 737 (June 24) 1932.
8. Bland, P. B.: Puerperal Morbidity and Mortality, M. J. & Rec. **129**: 83 (Jan. 16) 1929.
9. de Snoo: Die Bedeutung der Praeventiven Geburtshilfe, Monatsschr. f. Geburtsh. u. Gynäk **91**: 1, 1932.
10. Browne, F. J.: Antenatal Care and Maternal Mortality, Lancet **2**: 1 (July 2) 1932.
10a. Final Report of the Departmental Committee on Maternal Mortality and Morbidity, Ministry of Health, London, 1932.
11. De Porte: Maternal Mortality and Stillbirths in New York State: 1915-1925, New York State Department of Health, 1928.
12. Kinloch, J. P.; Smith, J., and Stephen, J. A.: Maternal Mortality, Edinburgh, His Majesty's Stat. Off., 1928.

There is reason to believe that the high incidence of puerperal sepsis in maternity institutions in Aberdeen is due to contagion. The abnormally high death rate in public institutions is due only in part to their selection of difficult and complicated cases.

These observations are the more surprising because the investigators found on the other hand that the cleanliness, size, and crowdedness of the house have no significant effect on puerperal mortality. This would mean that home delivery, even under the poorest conditions, is safer than hospital delivery—indeed, an alarming statement. Both McCord [13] and Julius Levy [14] prove that women are safer in the hands of midwives than when cared for by physicians. Dublin [15] reports 1,000 cases delivered by nurse-midwives among the mountain folk of Kentucky, with no death from sepsis. He also reported on 2,982 women delivered in New York City hospitals and 5,183 women delivered in their homes, with mortalities of 5.3 and 1.9 per thousand, respectively, commenting thus: "There is any amount of evidence now, I believe, to indicate that there is a serious risk in the usual maternity ward which is absent in the usual confinement at home." Dublin is a great statistical authority.

In the preface to Macgregor's paper on "Puerperal Infection in Maternity Hospitals," Kinloch writes:

There is reason to believe that the results as recorded in the Aberdeen and Glasgow reports do not differ appreciably from the results obtained in other centers. If this be so then it is scarcely possible to exaggerate the gravity of the indictments against the state of institutional midwifery in this country.

Seeing these figures, one almost wonders whether the hospitalization of normal labor cases should not be abandoned (as was recommended by Bumm [16]), leaving the normal deliveries to private physicians or even midwives, and reserving the hospital, with its better equipment, for complicated cases only. Indeed, some other very well known men have made this or similar suggestions.

Kinloch, Smith and Stephen arrive at the following conclusions:

The evidence supports the view that the development of a new midwifery organization in which midwives conduct all normal deliveries, and in which doctors provide the antenatal services and deal with obstetrical complications, will result in a significant reduction in puerperal mortality.

Young [17] says:

The well established risks of contact infection in hospitals call for care in the extension of the hospital system of maternity service.

De Snoo of Utrecht writes:

The probability of a spontaneous labor is smaller in a hospital than in the home, and it is even possible that for this reason the disadvantages of a hospital delivery are larger than the advantages.

As a prophylactic method against infection he recommends a "restriction of hospital deliveries."

In a private communication to Dr. DeLee, Dr. J. B. Dawson of Dunedin, New Zealand, states that in 1930 the maternity hospitals had a maternal mortality of 2.78 per thousand, while the "mixed hospitals" showed 4.3 per thousand. The public hospitals (without special lying-in wards) and private practice showed 4.5.

These statements certainly are astonishing. However, if we would really adopt the opinion that the increasing hospitalization of parturient women is not an improvement, is it a development which depends at all on us obstetricians or the medical profession? Could we, even if we would, stop this development and bring back the times when every married woman had her baby in her home? We could not! This rapidly increasing demand for hospitalization of delivery cases, which is found all over the world, does not come alone from the medical profession but is a demand of the public itself. The reasons seem to be multiple. Poor economic conditions with insufficient housing explain the conditions in Germany, because there the parturient woman may have her baby in a good public hospital without any charge, while at home delivery entails all kinds of trouble and expenses. In America it seems that the comforts of the hospital compete with the disadvantages of apartments and hotels, which explains the preference for the hospital. Furthermore, here also, with living conditions getting worse, many women are forced to abandon the expensive private physician and to choose cheaper or even charity hospitals. Besides this, the hospital delivery has great advantages over the delivery in the private home: better equipment, experienced assistants, and immediate help in case of emergency. Therefore, even if considered desirable, an attempt to stem the flow of patients to the maternities would fail, and, realizing the dangers lurking in hospitals, we should do everything to improve conditions of the institutional delivery, so that it will turn out to be safer than home delivery, and give the mothers, who come to us with confidence, all the best we can create.

To be able to make such improvements we must first determine what is wrong with the hospital delivery. Why do more women die in the well equipped, fully staffed hospitals than die in the primitive home?

Some authors claim that polypragmatism, which is invited by the elusive security of modern surgical and anesthetic methods, is the cause for the general high mortality and morbidity.

Flint,[18] in his article concerning the responsibility of the medical profession in further reducing maternal mortality, writes: "Less operating, more conservatism is, in my opinion, the outstanding remedy for the present high mortality." Rock [19] declaims against meddlesome midwifery. He writes:

The first commanding detail that obtrudes itself on analysis of what we consider preventable deaths, is that 71 per cent of them followed operative deliveries. . . . We must recognize that there is a direct causal relationship between a high operative incidence and our high maternal mortality.

Polak, in his White House Conference report, says:

In New York State the gain which has been made by prenatal care, antenatal propaganda, better, cleaner and more conservative obstetrics in the rural districts, is offset in the hospitals of the urban areas by a great increase in operative deliveries and the complications which follow.

Ehrenfest writes:

Artificial delivery is becoming increasingly frequent, especially in hospital practice, chiefly as the result of four factors: (1) a sense of safety, often false; (2) the almost universal use of

13. McCord, J. R.: The Education of Midwives, Am. J. Obst. & Gynec. **21**: 837 (June) 1931.
14. Levy, Julius: Reports of the Health Department, Newark, N. J.
15. Dublin, L. T.: Metropolitan Life Insurance Company letter, May 4, 1932.
16. Bumm, Ernst: Arch. f. Gynäk. **97**: 628 (July) 1912; Grundriss der Geburtshilfe, Berlin, 1922.
17. Young, cited by Kinloch, Smith and Stephen.[12]
18. Flint, Austin: Responsibility of the Medical Profession in Further Reducing Maternal Mortality, Am. J. Obst. & Gynec. **9**: 864 (June) 1925.
19. Rock, John: Maternal Mortality: What Must Be Done About It, New England J. Med. **205**: 899 (Nov. 5) 1931.

anesthetics in response to the demands of the patients; (3) an exaggerated idea of the value of the infant's life and of the value of operative delivery in conserving this life; (4) the often false idea that artificial delivery is easier on the mother, incidentally an idea which complies with the present demand of women for a short labor.

Piper [20] directly blames the polypragmatism that is conducted in the larger hospitals for the fact that, while "rural obstetrics has long been regarded as poor obstetrics, a study reveals that the rural status shows a better record in every instance than that given for the urban."

His opinions are supported by the figures that are published about maternal mortality in New York State by DePorte. They show that "in 1921-1925 in the urban part of the state the mortality from puerperal septicemia was 1.3 per cent higher than in the preceding five years and mortality from all other puerperal causes increased 8.6 per cent, whereas in rural New York mortality from puerperal septicemia declined 23.9 per cent and mortality from all other puerperal causes, 27.3 per cent."

Meddlesome midwifery is the fault of the physician and should be checked by better obstetric training.

It is, however, not the only danger that is connected with hospital deliveries. The fearful enemy puerperal sepsis, which endangered the lives of the mothers in preantiseptic times and brought about in the hospitals mortality rates as high as 33 per cent, is still present today. Six thousand women die annually in the United States from puerperal infection and there has been no decrease in recent years, as may be seen in the United States Census Reports and those of individual states.

As far as Germany is concerned, Sigwart [21] gives statistics of mortality from puerperal fever: In 1901 there were 14.6 maternal deaths for every 10,000 babies. In 1916 there were 22.2, and in 1921 there were 28.3. While this increase is certainly due in part to the increase of criminal abortions, other data given by him reveal that there is also an increase of septic deaths after delivery at term. In 1911 the mortality in Berlin from puerperal fever was 21.2 for every 10,000 births. In 1917 it was 15.9; in 1921, 23.3, and in 1922, 23.0. While these statistics show marked changes from year to year, they reveal the highest death rate in the later years—certainly no sign of improvement.

The death rate from puerperal sepsis is actually higher than reported in the various countries, since many women die from indirect or later effects of infection which are not classified properly or in which the connection is hidden by time. Pulmonary embolism, abscess, endocarditis (leading to organic heart disease) and surgical kidney are examples.

Goodall,[22] in his book on puerperal infection, writes: "There is no such case as aseptic thrombophlebitis, or aseptic febrile conditions in the puerperium." Later he states: "Eighty per cent of the cases of puerperal infection are symptom free. The other 20 per cent have a varied symptomatology."

There is no question that delivery in the general hospital carries a much higher danger of contagion than delivery in the home. Ehrenfest says that "the increasing hospitalization of parturient women has many decided advantages but as well such disadvantages as exposure to cross infection." Goodall believes "the hand is undoubtedly the commonest source of infection," and Gibberd [23] points to "the seasonal relationship between deaths from puerperal sepsis and throat infection" and says that "the association of epidemics of sepsis in institutions with outbreaks of streptococcal infection amongst the personnel has been noted in many instances." Kinloch, Smith and Stephen also incriminate throat infection, and the existence of "carriers" seems about proved.

As far as auto-infection is concerned, their observations support Young's view that "auto-infection as a primary factor plays a quite unimportant part in the death rate from sepsis and that in our search for essential causes we must address ourselves to the remaining factors of contagion and trauma." Moreover, it would be difficult to explain why auto-infection should occur so much more frequently in hospital cases than in cases delivered at home and in the practice of midwives. Therefore, we will not go into detail concerning the question of auto-infection, which has created a vast literature, because it would not bring about any new explanations as to why hospitals sometimes have a higher mortality than deliveries in the home.

Air infection has usually been given a minor rôle or no rôle at all in the causation of epidemics of puerperal fever, but lately it is beginning to be thought that it may have some real bearing after all.

Robinson and Cuttle [24] describe a small epidemic of puerperal fever in a hospital and admit the probability of air-borne infection, the puerperal woman in her own home running little risk.

DeLee, after decrying the stepmotherly treatment that the maternity ward of the average general hospital receives, makes this devastating statement:

> There is one evil, however, that surpassess all these and that makes me declare that the maternity ward in the general hospital of today is a dangerous place for a woman to have a baby. The peril lies in the infective influences which emanate from the wards devoted to medicine, surgery, gynecology, pediatrics, the laboratories and the autopsy room.

He demands for the maternity ward equality with the surgical, and says:

> In addition to all this the maternity should be in a separate, detached building with its own laundry, kitchen, and quarters for help. In large institutions the problem is easy of solution; for smaller hospitals the moral responsibility may be met by building a maternity cottage adjacent to the main building. The flexibility of the maternity should be such that one never has to permit the puerperae to overflow into the general wards of the hospital.
>
> Cases of infection develop in every maternity no matter how carefully conducted, and, if kept in the building, they are a menace as great, if not greater, than are such cases in the surgical ward. Such infections are to be transferred to the main building, to a special ward set aside for and properly adapted to the handling of all septic cases—those from the surgical and medical wards as well as those from the maternity, or they may be taken to a detached isolation pavilion.

That DeLee's demands did not originate from utopianism and fanaticism but from a good sound knowledge of human nature and of hospital management is clear from his following statement:

> I will concede that if the maternity ward in the general hospital were on a completely separated floor, and that if the doctors, students, nurses, orderlies, laundrymen and maids

20. Piper, W. A.: Rural Obstetrics and a Comparative Study of Its Relation to Puerperal Mortality Statistics, Minnesota Med. **9**: 489 (Sept.) 1926.
21. Sigwart, in Halban-Seitz: Handbuch der Biologie und Pathologie des Weibes **8**, part 1, p. 469.
22. Goodall: Puerperal Infection, Montreal, 1932.
23. Gibberd, G. F.: Streptococcal Puerperal Sepsis, Guy's Hosp. Rep. **81**: 29 (Jan.) 1931.
24. Robinson, A. L., and Cuttle, G. E.: Infectious Puerperal Fever, Lancet **1**: 67 (Jan. 11) 1930.

always carried out an intelligent aseptic technic the equivalent of that practiced in the best surgical operating rooms, while even then it would not be possible to insist it is perfectly safe to treat maternity cases under the same roof with surgical and medical cases, the element of danger would be reduced to such a minimum that the public would be willing to accept it against the expense and trouble of carrying out ideals. Since, however, we doctors should be satisfied with nothing less than perfection, it behooves us to strive with might and main for the ideal.

These excerpts come from articles published during 1926 and 1927 in the *Modern Hospital* and its yearbook and were supported by an array of facts to which reference will be made later on. They evoked a storm of criticism to which Dr. DeLee replied through that magazine. This polemic Dr. DeLee will rehearse briefly in his closing remarks.

I shall now investigate the grounds on which DeLee made his amazing declaration and then his demand for isolation of infected cases, beginning with a quotation from his 1926 paper:

The menace of the general wards of the hospital to the maternity was brought home to me thirty-three years ago when I had my first experience with an epidemic of puerperal infection. In rapid succession four women developed septicemia; of these, one died and one had pelvic abscess. In addition to the four, several milder cases ran short courses.

In common with other surgeons I hoped that by refining the aseptic technic, by using rubber gloves, by keeping the puerperae apart from the general medical and surgical cases, we could prevent the occasional infection and certainly avert epidemics.

This hope and these endeavors have proved vain. Within the last few years the frequency of individual cases of puerperal infection has grown and the number of serious epidemics has increased in dismaying proportions. I have personal knowledge of the following instances, all occurring within the last four years and all in good hospitals:

General class A hospital, maternity ward all on one floor, ten cases of puerperal infection, six severe, three deaths.

General hospital, maternity patients on same floor as surgical, five mothers seriously ill, six babies (one twin); three mothers and three babies died of infection. (This is only part of the story, the rest was concealed.)

General hospital, maternity ward on one floor of a wing, thirty-six cases, two died, two transferred as scarlet fever. (Story incomplete.)

General hospital, maternity part of floor with medical and children's cases, fourteen cases, three deaths.

Class A hospital, state of New York, fifteen cases streptococcus puerperal infection and four of diphtheria; three deaths.

Class A hospital, Illinois, five cases puerperal streptococcus bacteremia within three weeks. All died.

Class B hospital, Illinois, superintendent reports a severe epidemic of puerperal septicemia but withheld details.

General class A hospital, in Boston, twenty to thirty cases of puerperal fever, six deaths. . . .

Few epidemics are reported in the literature. Those hospitals publishing their cases are entitled to praise. Tinker of Ithaca, in a paper on skin disinfection, mentions an outbreak of Streptococcus hemolyticus infection in the maternity ward, with two deaths.

Dafoe[25] gives an account of eight fatal cases of puerperal sepsis occurring in three weeks in the maternity ward of the Toronto General Hospital, Toronto, Ont.

Morris[26] of Australia reports the closing of a hospital because of serious fulminating puerperal septicemia, which was traced to the gynecologic patients, on another floor, and calls attention to the conspicuously low sepsis rate of the extern cases.

Bourne[27] of London: six cases, four deaths. He says, "It seemed that the presence of the infecting case within the radius of the ordinary traffic of the wards was sufficient to disseminate serious and fatal infection." The "infecting case" was not examined and there was no connection possible through the nurses.

Vogt[28] says that in a German maternity it was necessary, during the war, to receive wounded soldiers and at once infections appeared among the puerperae.

In June, 1925, a doctor wrote me for advice as to the cure of puerperal peritonitis, which had been prevalent in the maternity ward, afflicting clean cases delivered spontaneously without vaginal examinations. The last month three women had died. . . .

Many years ago my attention was drawn to the dangers of general hospitals for the babies:

General, class A hospital, maternity ward on one floor of wing used for medical and children's diseases, 75 per cent of the babies had temperature ranging from 101 to 103, and so regularly that the head of the pediatric department called the condition "physiologic"! One of my babies died of erysipelas; one of my clean deliveries developed a fatal streptococcus septicemia; another died of pyemia, in this institution.

The chief obstetrician of one institution complains of the frequency of boils and pustular eruptions and pyemia among the infants in his ward. (This hospital in May, 1927, had two deaths from sepsis.)

General hospital, maternity ward at end of general ward floor, shut off by two doors with vestibule between: epidemic of septicemia carried off ten new-born babies; ward closed, disinfected and painted; reopened, and within three months another epidemic, precisely similar, killed nine babies. . . .

The mothers are exposed to other risks, such as breast abscess. I shall mention only a few of my experiences:

General class A hospital, obstetric patients in private rooms mixed with surgical cases on the operating room floor, five of my private patients had breast abscesses at one time; same hospital, eight years later, an epidemic of breast abscesses, more than six cases.

Special maternity hospital without means of isolating cases other than so-called "administrative"; fifteen breast abscesses in spite of most rigorous methods of prevention. In the last nine years proper architectural and administrative isolation being provided, breast abscesses have become very rare.

To these I may add the following of latest date:

General class A hospital, 1932, five infections, four deaths.

General class A hospital, twelve cases of puerperal fever, four deaths.

General class A hospital, 1932, five cases of infection.

Allan and Bryce[29] describe an outbreak of sepsis which concerned even the babies, in a small Australian hospital registered for general and obstetric patients.

Macgregor[30] of Glasgow reports an outbreak of sepsis in six cases which occurred in the maternity section of a large general hospital during April and May, 1929. Furthermore, he gives details of an extensive outbreak of infection in the maternity block of a large general hospital. Between the months of February and June, 1928, 289 women were confined, of whom 54 (almost 19 per cent) were considered to have contracted puerperal fever, with 10 deaths. The latter epidemic proves the enormous difficulty in cleaning a hospital after it is once infected. Even though the one under discussion was closed for about two weeks, the epidemic continued after the reopening.

25. Dafoe, W. A.: Edinburgh M. J. (Tr. Edinburgh Obst. Soc.) **32**: 133 (Sept.) 1925.
26. Morris, E. S.: M. J. Australia **2**: 301 (Sept. 12) 1925.
27. Bourne, A. W.: Recent Advances in Obstetrics, Philadelphia, P. Blakiston's Son & Co., 1926, p. 154.
28. Vogt: Zentrabl. f. Gynäk. **51**, April 23, 1927.
29. Allan, R. M., and Bryce, L. M.: A Report on an Epidemic of Septic Infection Occurring in a Maternity Hospital, M. J. Australia **1**: 390 (March 31) 1928.
30. Macgregor, A. S. M.: Observations on Puerperal Sepsis from the Epidemiological Standpoint, Glasgow M. J. **112**: 252 (Nov.) 1929.

Macgregor, however, reports also an outbreak of acute sepsis in a maternity cottage hospital, which he calls long established and well conducted. Ten cases of puerperal sepsis with four deaths and two cases of erysipelas with one death occurred. He states that an experience of this kind is unique in the history of this institution and may be explained by the extremely virulent nature of the infection, which was introduced by a patient who was considered to have an acute bronchitis. Even though Macgregor says that the means and procedure for isolation were satisfactory, they apparently were not sufficient in this case. Since there was only "an isolation room" and apparently no special septic staff, this hospital would not meet the demands of DeLee for an ideal maternity hospital.

Watson [31] published a report of the epidemic at Sloane Hospital for Women, New York, in 1927, twenty-five cases with nine deaths.

In 1932, Kellogg [32] of Boston, describing two epidemics of puerperal infection, states that nine others have occurred in seven hospitals in Boston in twenty years, only one without fatalities.

From St. Paul, in 1932, come reports of two epidemics, with six and four deaths, respectively, and from New York one and Connecticut one, within the month.

It is known that in preantiseptic times the mortality in all maternity houses was much higher than that of the home deliveries, but especially high mortality rates were found when the parturients were under the same roof with other patients, for instance, wounded soldiers.[21]

A search through the literature discloses numerous authors who believe, like DeLee, that the maternity wards of the general hospital are a danger and that the special maternity hospital is the only ideal goal.

Flint writes:

> In special hospitals, however, such mortality (from infection) has almost disappeared. The morbidity from milder grades of infection is about five times as frequent as the deaths and how many women are left incurable invalids it is impossible to estimate. I believe that infection occurs most frequently in private practice and in general hospitals with a maternity service and least frequently in special hospitals.

Polak, in his report for the White House Conference on Child Health and Protection, points out that the maternal mortality rate in special hospitals is lower than the general mortality rate of the locality and of the general hospital with segregated maternity wards.

Bill [33] says:

> Hospitalization of maternity patients has increased to a remarkable extent and it is encouraging to note the greatly increased number of specialized maternity hospitals in this country. The advantages of the isolated maternity pavilion in stimulating the advance of maternity welfare, in the training of obstetricians and in the prevention of infections have been definitely proven. The reduction of the most outstanding cause of maternal mortality in this country, infection, will come through a better realization of the importance of the principle upon which the isolated maternity pavilion is based, namely, that there should be no possible communication between it and any sources of infection. This is an old law but one continually broken both by general practitioners who continue to go from infected cases to confinements, and in hospitals where the maternity ward is so located and the medical and nursing staffs so organized that transmission of infection can scarcely be avoided.

In May, 1925, at Washington, the maternal welfare committee of the American Gynecological Society, under the chairmanship of Prof. F. L. Adair, presented a resolution which was adopted unanimously. This committee has been functioning several years, its object being to find out why the mortality continues so high among American mothers. As one potent cause of death, the committee has found puerperal infection in general hospitals. The resolution, as signed by Dr. George Kosmak, New York; Dr. Henry Schwarz, St. Louis; Dr. George Clark Mosher, Kansas City; Dr. W. C. Danforth, Evanston, Ill.; Dr. Frank W. Lynch, San Francisco; Dr. Robert L. De Normandie, Boston; Dr. Ralph W. Lobenstine, New York, and Dr. Fred L. Adair, Minneapolis, is as follows:

> It is resolved that as a measure to promote better care of pregnant women, with a corresponding reduction of maternal and infant morbidity and mortality due to septic infection in hospital practice, the Joint Committee on Maternal Welfare advocates a detached and separate maternity service, with its own personnel, in all general hospitals admitting pregnancy cases, and also recommends as an ultimate ideal that physically separated buildings be provided for this purpose when practical.

At the 1925 meeting of the Hospital Association of the State of Illinois, H. L. Fritschel [34] of Milwaukee made the recommendation "that the maternity hospital should be a separate unit distinct from the general hospital."

Dr. Franklin H. Martin,[34] director general of the American College of Surgeons, after studying the reports on hospitals in the United States, declared that in his opinion the general hospital carries dangers to the puerperal patient, and he advised the strictest isolation of the maternity ward, when practicable, in existing hospitals, and that architectural isolation, preferably in a separate unit, be provided in new hospitals.

Murray's [35] report from the Princess Mary Maternity Hospital, Newcastle on Tyne, is significant: "In this hospital outbreaks of pyrexia and definite sepsis occurring from time to time among the 'clean' cases, caused much anxiety and demanded investigation." The complete "isolation" demanded by the result of this investigation resulted in "improvement at once."

Watson asks for a self-contained isolation unit in every maternity hospital.

Robinson and Cuttle say: "All infected puerperal women should be isolated as strictly as patients with other infectious fevers."

Young goes even further than DeLee. He makes the suggestion that

> the "clean" or "booked" case, untouched prior to admission, should have its own institution, and that the "suspected" case, i. e. that subjected to certain kinds of interference before admission, should be provided for in a different institution.

Murray [36] writes:

> The following would appear to be the minimum requirements of a modern maternity hospital: (1) an admission room for preliminary classification; (2) examination rooms and wards for (*a*) clean, (*b*) suspect cases, (*c*) cases of genital sepsis, (*d*) cases of extragenital sepsis. Each of these four units should have its own labor ward and nursing staff.

Stoeckel [37] of Berlin insists, as a minimum for even the smallest maternity, that healthy and infected

31. Watson, B. P.: An Outbreak of Puerperal Sepsis in New York City, Am. J. Obst. & Gynec. **16**: 157 (Aug.) 1928.
32. Kellogg, F. S.: Read before the Association of Obstetricians and Gynecologists at French Lick, Ind., in September, 1932.
33. Bill: President's Address: The Newer Obstetrics, read before the American Association of Obstetricians, Gynecologists and Abdominal Surgeons in September, 1931.
34. Cited by DeLee.[2]
35. Murray, E. F.: Puerperal Sepsis, Brit. M. J. **1**: 814 (May 3) 1930.
36. Murray, E. F.: Puerperal Sepsis, Brit. M. J. **2**: 514 (Sept. 27) 1930.
37. Stoeckel, W.: Mindestforderungen für Einrichtung von Entbindungsanstalten, Deutsche med. Wchnschr. **56**: 255 (Feb. 14), 298 (Feb. 21) 1930.

patients during delivery and in the puerperium be treated separately.

De Snoo of Utrecht writes:

> The most dangerous germs are those which come from infected puerperae. This fact explains why the mortality after spontaneous delivery in the hospital is higher than at home.

A committee of eminent obstetricians appointed by the British government [38] in its final report recommended that cases of sepsis, whether arising in the hospital or admitted from the outside, should not be treated in a maternity hospital unless an entirely separate block, separate nursing and ward staff and separate staff accommodations were provided. For cases that might be a source of danger similar precautions should be taken, and even cases of abortion should not be admitted to ordinary wards.

These excerpts support the medical necessity of DeLee's demands: architectural separation of the maternity hospital from the general hospital and strictest isolation of infected or even suspicious cases. Another question is whether these demands can be carried out economically; but for the welfare of the mothers nothing should be too expensive.

FACING THE FACTS

By Dr. DeLee

One would think that every hospital superintendent or department head would receive an awakening shock on reading Dr. Siedentopf's paper; yet when my first two articles were published, presenting similar facts and advising absolute segregation of clean cases, a stormy discussion followed. All those who took part emphasized the financial aspect of the situation—segregation was too costly, in money. I will say only this: Nothing compares in value with human life.

J. Whitridge Williams [39] said that at Johns Hopkins "for nearly a generation" the infectious isolation ward of the whole hospital was adjacent to the maternity and its entrance not 20 feet away from the door of the obstetric ward, yet "serious infection rarely occurred and at no time caused anxiety." Newer and better quarters are now obtained, although the isolation ward is still nearby and the connections with the general hospital are the same. In 1927, in his discussion of my papers he said:

> It is a matter of indifference what types of patients occupy the floors above or below the maternity, so long as a really rigid aseptic technic is employed by the medical staff and the best traditions of intelligent nursing are followed.

In spite of the "best traditions of intelligent nursing," the reports of this hospital show one of the highest morbidity rates in the United States, and a year before Williams died he told me they had an epidemic of puerperal sepsis of sixty-two cases.

Dr. Joseph B. Howland [40] of Peter Bent Brigham Hospital, Boston, said in his reply that my "recommendations were disconcerting" and that I must present "more evidence" before hospital building committees would follow them. Well, the evidence, enough to convince any jury of husbands or any committee of life insurance adjusters, was presented in 1927 and is piling up so high that it may fall on the most obstinate objector. Dr. Howland says that the "modern hospital laundry" can be trusted to sterilize the wash and that "autoclaves sometimes are faulty in operation, but this is no excuse for faulty sterilizing."

All hospitals sterilize laundry for the operating rooms, and many autoclave the linen going to the nurseries—to prevent pemphigus; i. e., they do not trust "the modern hospital laundry." My bacteriologic studies prove that the streptococcus et al. can go through the latest American laundry machinery unscathed. Furthermore, patients sicken and die because of faulty sterilizing (as occurred recently in a new hospital), and had those faulty sterilizers not been given virulent organisms, prevalent in the surgical wards, to sterilize, their faultiness would not have been fatal. Finally, it was from Boston that Kellogg reported nine epidemics of puerperal infection.

Dr. J. C. Doane of Philadelphia spoke of our "modern knowledge concerning the nature of bacteria and the modes of their transmission from the sick to the well, and particularly in view of our recently acquired knowledge concerning scarlet fever and measles."

Dr. L. A. Sexton of Hartford, Conn., says: "It is a well established fact that the various types of infection, even contagion, can be handled in the same ward by the same personnel without cross infection if a sufficient amount of intelligence is put into service."

After reading of the widespread epidemics in the United States and abroad, only one conclusion is possible: the amount of intelligence available for the service is insufficient.

I claim that not enough is yet known "of the nature of bacteria, and of the means of their transmission from the sick to the well" and that therefore infected puerperae or any infection cannot be handled in the same ward by the same personnel, nor indeed in the same building, with healthy women. The work of Richardson,[41] to be mentioned later, may be considered in this connection.

Up to this point I have spoken only about puerperal infections. But the surgeons have many epidemics and numerous cases of cross infections too. I have personal knowledge of epidemics of varying severity on the surgical side, such as successive peritonitis cases after clean operations in three different hospitals; pyocyaneus contamination of every surgical wound on two large floors; two small epidemics of tetanus; numerous epidemics of "catgut" infection. At a county medical society meeting held in a large city at which I was present, one hospital reported 17 per cent mortality after hysterectomy for fibroid; another, 8 per cent.

Recently a Florida hospital had twenty cases of gas bacillus operative wound infection with eight deaths. In March, 1927, a new hospital in Illinois had thirty-eight pyococcic operative infections at one time.

In a general hospital in Maryland, three clean laparotomies were done one morning; all three patients died of peritonitis.

In a general hospital in Massachusetts, a similar condition prevailed.

In June, 1925, an article appeared in an American journal detailing six cases of fatal peritonitis following apparently clean operations. Bumm mentions such epidemics as occurring in Berlin; Zweifel refers to cases in Leipzig. .

38. London Letter, J. A. M. A. **99:** 926 (Sept. 10) 1932, taken from Final Report of Departmental Committee on Maternal Mortality and Morbidity, British Ministry of Health, London, 1932, p. 40.

39. Williams, J. W.: Is an Architecturally Isolated Building Essential for a Lying-in Hospital? Mod. Hosp. **28:** 58 (April) 1927.

40. Howland, J. B.; Ehrenfest, Hugo; Doane, J. C., and Sexton, L. A.: Separate Building or Department for the Maternity? Mod. Hosp. **28:** 103 (May) 1927.

41. Richardson: Monthly Bull., Dept. of Health, Providence, R. I., January, 1926.

The Germans have long appreciated the dangers of hospital contagion. Sippel,[42] declaring that epidemics of peritonitis still frequently occur in German hospitals in spite of aseptic technic, insisted that special wards and operating rooms be given to clean cases. Franz, Germany's greatest gynecologic operator, who died in 1926, demanded the same.

Tinker [43] of Ithaca, N. Y., in 1926, referred to the reports of sixteen surgeons who admitted serious wound infections in their work—streptococcus, gas bacillus, tetanus. A surgeon left a great university hospital to practice in the country in the West. He was astounded at the rarity of infection in his "kitchen laparotomies," compared with the frequency in his famous hospital.

One of the objectors to my first papers has recently had something to think over when twenty-six patients died in an epidemic of surgical infection in his own hospital, largely "clean" cases.

It is high time that the profession realized that conditions are not the best in our hospitals today, because if we don't do something about it the public will. Bacon [44] has recommended state inspection and supervision for the maternities; but I hold that if this is done the surgery should be governed likewise and the other hospital departments as well.

What can be done about it? First of all, it must be realized that the human being is the most common ultimate source of infection and that since large numbers of diseased persons are gathered together in one place in the general hospital, this is a veritable cesspool of infections. To put it more mildly, it will be granted without argument that if infectious cases are present in a hospital, to carry the bacteria they emit to clean cases under the same roof will be easier than it would be to import the bacteria from the outside.

How are the germs transported? There are only three ways: direct contact, indirect or intermediate contact, and the air-borne route.

AIR-BORNE INFECTION

While I consider, as does every one else, that indirect contact distribution causes most epidemics and sporadic cross infections in hospitals, I feel that currents of air can transport inoculable bacteria from one patient to another, even if they are separated in different parts of the same building. This sounds almost archaic, reminding one of the old "miasmatic" days, and I would like to say a good deal about it, because, first, it may explain certain rare and mysterious individual cases and epidemics; secondly, it touches intimately on the borderlands of the field of indirect contact infection; thirdly, when one is striving for perfection no detail lacks importance, and, fourthly, if the danger of air-borne disease is shut out, most of the possibilities of direct and indirect contact infection are automatically eliminated. But lack of space forbids and I must content myself to referring to my original articles in the *Modern Hospital*, to my textbook, and to a few general statements.

Is it a far-fetched assumption that pus or germ-bearing liquids spread on the floor may dry to powder, be ground up by traffic, and in the form of fine dust be disseminated throughout the institution by swirling air currents or ventilating flues? Further, it is known that many bacteria retain their vitality and infectivity for hours or days (tetanus spores for years). Is it too much to believe that germs carried to the patient in this dust or in the droplets of saliva that are ejected in talking, laughing, coughing, sneezing and that float in the air for hours and, settling on the sterile field of operation, on the catgut, on the operator's gloves, on the open wounds in surgical cases, on the vulva of the parturient woman, on the open wounds of the perineum, on the cracks in the nipples or on the baby's navel, may, even though weakened by drying and light, set up minor and graver infections?

Most hospital managers do not want to believe this, but Bumm (Germany's greatest obstetrician and an expert bacteriologist), Benthin, Hektoen, Kirschsteiner, Friedemann and Deicher, Trillat and many others declare it true. Trillat, professor at the Pasteur Institute of Paris, goes further and says that germs in droplets of moisture multiply during transit from one ward to another, some of these droplets becoming "veritable culture mediums" during their time of suspension. In presenting the work of Trillat to the Academy of Sciences recently,[45] Roux stated that Trillat has succeeded in demonstrating the correctness of his theories of air-borne infection by bringing about the inverse operation; namely, immunization. He made use of the infective agent of chicken cholera, after having shown that the contagion took place in the atmosphere of the poultry houses. He sprayed into this atmosphere dilutions of cultures, attenuated micro-organisms and vaccines, and brought about thus the rapid disappearance of epidemics in the infected poultry houses. Roux thought the work valuable as applied to the case of influenza, pneumonia and the like.

Indirect contact—the bacteria emitted from one patient being carried on instruments, gauzes, bed linen or blankets, on the hands of the attendants, on their clothes, on their hair or in their throats, and thus inoculated into another patient—is the most common method.

The chance of infection being carried in this intermediate manner depends on the qualities of the particular organism, on its life tenacity when dried or exposed to light, on its possessing spores and on other things. Terribly subtle are the habits of bacteria, and what was thought to be known about them is being demolished by the latest discoveries of Calmette, Kendall, Trillat, Ryan and Arnold,[46] and others. Many bacteria are showing pleomorphic qualities hitherto unknown, and why not therefore pleopathic action?

Lately it is being learned that surgeons and nurses can cause fatal infections by spitting the bacteria from their throats and blowing them from their noses into wounds and on to the sterile instruments.[47] Also the carrier's hands, hair, clothes and everything he has touched become covered with the bacteria from his mouth. The air of the room occupied by such a carrier soon becomes an incubator filled with suspended droplets of saliva. That this danger is beginning to be recognized is evident from the practice seen in the best operating rooms: covering the mouth and nose of every one—observers as well as operators—and the

42. Sippel: Translation in Year Book of Obstetrics, 1924.
43. Tinker, M. B., and Sutton, H. B.: Inefficiency of Most of the Commonly Used Skin Antiseptics, J. A. M. A. **87**: 1347 (Oct. 23) 1926.
44. Bacon, C. S.: Paper read before the Association of Obstetricians and Gynecologists at French Lick, Ind., September, 1932.
45. Paris Letter, J. A. M. A. **99**: 573 (Aug. 13) 1932
46. Experimental Evolution of Bacteria, editorial, J. A. M. A. **99**: 767 (Aug. 27) 1932.
47. Meleney, F. L.; Zau, Z. D.; Zaytzeff, H., and Harvey, H. D.: Epidemiologic and Bacteriologic Investigation of the Sloane Hospital Epidemic of Hemolytic Streptococcus Puerperal Fever in 1927, Am. J. Obst. & Gynec. **16**: 180 (Aug.) 1928.

unexceptional use of gowns. Even then, talking should be limited. Here air-borne and indirect contact infection fuse. But in the absence of actual nasopharyngeal disease, where do the surgeons and nurses pick up these virulent streptococci? Certainly not from the clean wards. If droplet transmission is so common, why are not more cases reported from private practice?

We have cited enough instances to prove the frequent occurrence of cross infections in both obstetric and surgical work. The Providence (R. I.) City Hospital is often mentioned as an example of what may be done in the care of the different contagious diseases under one roof. Compared with twenty years ago, Richardson's achievements in Providence are splendid, but I would not be satisfied with them, and he admits that with a changing nurse personnel perfect medical asepsis is impossible, and that "once measles, for instance, is introduced by mistake, most of the patients in the ward will contract the disease before the primary case can possibly be removed." He says, further, that "to be of any service the technic should be as rigid as that practiced in the operating room."

Any surgeon who will go over in his mind the vast machinery and complicated technic, the prolonged scrubbings, the numerous personnel, the rubber gloves and the like that make up the system of the modern operating room will agree with me that for an unassisted nurse or intern to carry out such multitudinous details on a ward floor, day in and day out, night after night, is impossible. Breaks in technic are bound to occur, and the statistical tables presented by Richardson in the article from which these quotations were made prove it.

Confirmatory experience respecting pemphigus neonatorum is in the stories from all general hospitals. No one is exempt, and in many the disease is continually endemic, breaking out all too often with extreme virulence. Special maternities have pemphigus, too, but with markedly less frequency and severity.

Illuminating and convincing is the history of the experience of the Chicago Lying-in Hospital. In 1,500 cases delivered in our first hospital, a remodeled residence with a washboiler for a sterilizer, there was one death from sepsis, a girl who had been raped and contracted gonorrhea; spontaneous delivery at term, with peritonitis; at autopsy pure cultures of gonococci and Streptococcus pyogenes (Prof. F. Robert Zeit, Northwestern University). One case of pemphigus occurred in this house, in the baby of a medical student who was clerk in a skin clinic at Rush Medical College.

In our next hospital, in which we had to care for infected cases in the building and delivered 2,500 women, we had one death, a cross infection of pneumonia; several puerperal infections; two epidemics of pemphigus, and one epidemic of breast abscesses, with fifteen cases.

In our third hospital, in which we had complete isolation of both clean and infected cases, we were happy. In twelve years and eleven months we delivered 34,807 women of 35,179 babies. We had a total maternal mortality of ninety-two, or 0.264 per cent. There were insignificant groups of mild infections without deaths, and there were only thirteen septic deaths distributed over the years: There were five embolisms; two women entered with sepsis in labor; two had pulmonary infection (autopsies made by Prof. H. Gideon Wells, University of Chicago); one entered with chancroids, precipitate labor; one entered with fresh gonorrhea; one died from transfusion; one had primary meningitis (autopsy). Adding in the emboli, which I consider always infections, we have eighteen (uncleansed), or 0.00051 per cent, or one infection death in 1,923 cases. Among the 35,179 babies, pemphigus appeared in epidemic form on two occasions, each time about twenty-five cases, and one baby died; the rest of the twelve years and eleven months we were exempt.

Our morbidity for this period was, according to the Strasbourg standard, 3.9 per cent, the British, 5.8 per cent, and our own strict standard, 11.9 per cent.

Then we moved to our present hospital, in which our isolation of the clean as well as the infected cases is good but not so complete. We have gynecologic cases in the building, and, further, our connections with a general hospital, research laboratories and the autopsy room are more intimate, though much better than the maternity ward in the average general hospital. There was little change in our practice, and that little should have improved our results because we did less operating (less polypragmatism) because we felt less safe than before.

Our experience immediately underwent a complete metamorphosis, and I found restored the conditions I had lived in during my service in the five general hospitals with which I had formerly and for many years been connected. During the first seven months we had an epidemic of puerperal infection, ten cases with two deaths. During this period our morbidity rate, according to the Strasbourg standard, was 4.7 per cent, the British, 13.5 per cent, and our own strict standard, 42.5 per cent. Pemphigus has been endemic most of the time, and we had one severe epidemic, fortunately without fatality. At the present writing we are free from infections.

These experiences in our own hospitals, with a technic improving right along, are almost equivalent to a laboratory experiment.

SUMMARY

A study of the incidence and causes of puerperal mortality was made by an unprejudiced observer.

Hospitalization of maternity cases is increasing everywhere, but the puerperal mortality is not decreasing anywhere.

Numerous authors call attention to the high institutional mortality compared with that of deliveries in the home.

Meddlesome midwifery and puerperal infection seem to cause the greater part of the mortality, either singly or in combination.

Dr. Siedentopf and I have collected more or less documented reports of thirty-eight epidemics of puerperal infection, of which thirty-five were in the maternity wards of general hospitals.

Numerous authorities agree with me that women are safer from infection at home or in a specialized maternity building, and some go even further than I do in the strictness of isolation.

CONCLUSIONS

Meddlesome midwifery must be abated or made safe.

Something is wrong with the maternity wards of general hospitals, and a great deal ought to be done about it.

My recommendation is architectural and administrative isolation of the clean maternity, until more is known about the nature of puerperal infection.

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ECLAMPSIA WITHOUT CONVULSIONS TERMINATING IN CEREBRAL APOPLEXY

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The use of the term "eclampsia without convulsions" has engendered a great deal of discussion, even though it has the sanction of many authors. Williams [1] defines eclampsia as an acute toxemia, usually but not always accompanied by convulsions. On the other hand, DeLee [2] states that eclampsia is not a disease by itself but only a symptom, the most outstanding one, of several underlying diseases. He recommends that the term "eclampsism" be used to cover all cases of toxemia in late pregnancy, which, if untreated or not properly treated, may lead to convulsions or coma, or both.

The confusion is the result of the ignorance that surrounds this clinicopathologic complex. There is still, unfortunately, no better term than "toxemia" to describe the condition of women who are sick, who have one or several different poisons in their tissues, manifested by vomiting, by a kidney lesion or severe liver damage, by retinal hemorrhage or even cerebral apoplexy, by premature separation of the placenta, or by a polyneuritis or a psychosis.

Although the phrase "eclampsia without convulsions" can well be critized, it is used here to mean the condition in pregnancy in which death occurred without convulsions but which resulted in autopsy observations identical with those of eclampsia. With the presentation of this report a review of the literature was felt indicated, as the last discussion of this condition in English, as far as can be determined from the available literature, appeared in 1907.[3]

To Schmorl, at the end of the last century, is quite universally given the credit for the establishment of the pathology of eclampsia. According to Liebmann,[4] he described it, briefly, as "degenerative kidney changes, particularly in the convoluted tubules where albuminous and fatty alterations are observed; necrosis in the liver with thrombosis in the interlobular and intralobular vessels; degeneration in the heart, particularly in the muscles; hemorrhage and softening in the brain; and widespread thrombosis in the internal organs." Bell [5] has recently described what he considered a characteristic kidney glomerular lesion, consisting of a dilatation of the glomerulus and a thickening of the capillary basement membrane with a narrowing of the lumen of the capillaries. The clinical and laboratory observations of this symptom complex have been so widely discussed in the textbooks and the literature that further mention is not necessary. Suffice it to say that all, many, few or even none of these symptoms and conditions accompany cases that have been competently diagnosed by the term eclampsia.

The insidiousness of the condition has been stressed, but these cases of eclampsia without convulsions should serve to stress ever further the dangers that lurk in pregnancy. They should warn the physician that treatment should be instituted before the onset of convulsions. They should emphasize again the importance of the so-called prodromal symptoms. Finally, recognizing the existence of this condition may help to clear up doubtful diagnoses.

In all, forty-three cases have been reported, although doubtless many others have been undiagnosed or have not been recorded. Slemons [3] found seven previous cases and added two more in 1907. The next review was that of Schmidt,[6] in 1911, who brought the total to twenty-four. Caffier [7] found thirty-eight cases up to 1927, with four others that had to be discarded because of the incompleteness either of the anamnesis or of the autopsy. His paper brings the literature to that date. Since then, similar conditions have been reported by Liebmann,[4] Pohl,[8] Bock [9] and Wronski.[10] Bock adds also the case of Burg and mentions three others as well as the case of Thallheimer, which cannot be included because of the lack of necropsy evidence.

The conditions found in these cases are of particular interest to all clinicians; for analysis, only thirty of the forty-four, including the present one, are available. The age limits were from 18 to 43 years; the parity from primigravidity to tertiodeciparity, with the distribution of nineteen primiparas and eleven multiparas. Prepartal cases numbered fourteen, of which the earliest was at three months, and ten were intrapartal, with six puerperal. These proportions are similar to those recorded by Greenhill (as quoted by DeLee) for the distribution of true eclampsia.

Of these thirty cases, only fourteen showed true premonitory signs. This amazingly low figure makes the seriousness of the situation all the more apparent. It is not impossible that symptoms would have been observed in the others had they been looked for, but this fact emphasizes again the necessity for the strictest watchfulness by those attending confinement.

Headache was the commonest symptom of all. Vomiting occurred eleven times; edema, ten times; visual disturbances occurred in six and epigastric pain in five cases. Albumin in the urine was reported only fifteen times, and fever was observed in fourteen cases. In nine instances circulatory collapse was the first warning of anything abnormal, and in eight cases unconsciousness, with or without the cardiac signs, ushered in the condition. The blood pressure records, unfortunately, are largely absent from the reports of the European clinics. In ten of these cases the diagnosis was missed completely until after the autopsy.

Equally uncommon and equally important for diagnosis and treatment is the matter of cerebral hemorrhage in eclampsia. Schmorl described bleeding into the brain as a significant part of the pathologic condition, and this has been confirmed by many other authors. However, the typical hemorrhage is a punctate one, and the frequency has been estimated at from fifty-eight out of sixty-five by Schmorl [11] to six out of twenty-one eclamptic autopsies by Teacher.[12] The

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cause is not known with any exactness, although the convulson itself as the cause has been discarded. As will be pointed out, hemorrhage occurs in the absence of convulsions. A likely explanation, as Benda [13] brought out, is the increased capillary permeability due to the toxemia.

Binder [14] recently reported a case of typical puerperal eclampsia in which, although the convulsions were controlled, death occurred on the sixteenth day from a hemorrhage into the left frontal lobe. He was able to find only fourteen others of massive hemorrhage fully reported, with reference to nine more. It is of interest to note that in his group the patients of Cronin and of Knight (quoted by Barrett and Harger [15]) who recovered from the hemiplegia did not have any convulsions. In the absence of demonstrable pathologic lesions, these two reports could not be included in the series of eclampsia without convulsions.

In the thirty cases of this series, the autopsy records make no mention of the brain in seven instances; in three, examination of the brain was negative; in two the brain was described as ischemic; punctate hemorrhage was found in ten. In nine cases, massive hemorrhage into one or another part of the brain is recorded. These are the reports of Desnoues, Seitz, Menière, Moynier, two by Schmorl, Esch, the recent one of Pohl, and the present one. Such a high incidence of eclamptic apoplexy in the absence of convulsions should be taken note of in the study of the subject.

REPORT OF CASE

A Negro woman, aged 19, a tertipara, was brought into the hospital in coma. Her past history included what was termed Bright's disease many years before, with a recurrence of edema of the face and feet on several occasions since. Other past history, family history and menstrual history were negative, and her two previous pregnancies were uneventful. Her present pregnancy was calculated to end the early part of March, 1932, and she had been followed in the outpatient department since the previous October. At that time her blood pressure was 104 systolic and 65 diastolic; the urine was normal and the general examination satisfactory. At no time did she have any toxic symptoms or vaginal bleeding; the urine was consistently normal, and her blood pressure varied between 95/75 and 115/85. This last reading was obtained at her last visit, two weeks before her admission. The Wassermann reaction had been recorded as negative.

February 28, she awoke from sleep twisting in bed, pulling her hair, and complaining of severe pain in the head. She became stuporous and lapsed into coma the following day, at which time she was brought into the hospital. Because of her condition the examination was meager. She was comatose and presented a ptosis of the right lid, contraction of the right pupil, flaccidity, partial anesthesia, and slight increase of reflexes on the right side. The lungs showed moist râles at both bases, but the heart was perfectly normal. There was no edema, but her blood pressure at that time was 150 systolic and 90 diastolic, and the urine showed a trace of albumin. A chemical examination of the blood showed: nonprotein nitrogen, 30, and sugar, 95; unfortunately the uric acid and the carbon dioxide combining power values were not obtained. The Wassermann reaction was again negative. The patient had a full term fetus which was alive. The next day her blood pressure had risen to 150 systolic and 120 diastolic, and the signs of the hemiplegia, which had been slight, became more marked. On consultation with the neurologic service a lumbar puncture was done, and bloody fluid at a heightened tension was obtained. Unfortunately, a Wassermann test on this fluid was not done.

A full term live baby was delivered the next day, March 2, by a classic cesarean section under local infiltration anesthesia, primarily for the sake of the child, but also in the hope that rapid termination of the pregnancy might ameliorate the mother's condition. Although the patient was treated with infusions of dextrose, her temperature, which had been elevated on admission, rose steadily, and ten hours later she died. At no time did she recover full consciousness, although she moved her left leg a little during the operation, and at no time did she have anything resembling a convulsion.

The significant gross observations at necropsy were as follows: The left kidney was found enlarged to twice the normal size with a markedly dilated ureter; the capsule stripped easily, but the surface was very congested. The brain showed massive hemorrhage from the lenticulostriate artery into the internal capsule, with considerable destruction of the brain tissue.

The study of the microscopic sections showed in the kidney a slight degree of hyperemia of the vessels; there was an albuminous exudate in the glomeruli, without, however, any increase in cell content, and a slight thickening of the wall of Bowman's capsule; the tubules showed marked degenerative changes with entire necrosis in some places. The liver presented a picture typical of focal necrosis. Although the areas were few, each was characteristic and surrounded by a zone of slight hyperemia and white blood cells. There was parenchymatous degeneration of the liver cells, and in a few places there was pyknosis or complete disappearance of the nuclei. In the brain, in the neighborhood of the massive hemorrhage, there was vast destruction of the nervous tissue without signs of repair or gliomatous hyperplasia. In other parts of the brain many small hemorrhages were observed, resembling more diapedesis of red blood cells through the wall of the markedly hyperemic vessels than rupture of the vessels. These petechial hemorrhages filled the perivascular spaces and penetrated but little into the nervous tissue. Other organs showed no pathologic changes.

The diagnosis of the pathologist was: status post cesarean section, subacute glomerular nephritis with degenerative tubular nephritis, focal necrosis of the liver, petechial and massive hemorrhage into the brain, eclampsia.

Dr. Emmerich von Haam, who examined the sections, adds the following discussion: "The diagnosis of eclampsia is justified by the pathological findings of the severe changes in the kidney combined with the typical focal necrosis in the liver and the multiple hemorrhages in the brain. The degenerative changes in the kidney were more marked than the few signs of damage to the glomeruli and were of acute origin. The necrotic areas in the liver were not as numerous as is usually found in eclampsia, but the short course of the disease gives satisfactory explanation. For the findings in the brain hardly another etiological factor can be given than that of eclampsia as described by Schmorl and others. No change in the vessel walls of the vascular system could be found which might indicate a luetic or an arteriosclerotic origin."

SUMMARY

This is a case, then, of a pregnant woman, aged 19, dying at term of cerebral apoplexy. Syphilis and arteriosclerosis can apparently be ruled out. She had no prodromes of any sort and the diagnosis was made on the hypertension, albuminuria and suddenness of onset in a pregnant woman. There were no convulsions, but the pathologic condition was identical with that of eclampsia. For want of a better term, and conforming to the usage by many authors, this case is described as "eclampsia without convulsions." It takes its place with forty-three other such cases reported in the literature and reviewed here, and its termination in massive cerebral hemorrhage finds a counterpart in at least eight of these. This tragic complication reveals the insidious, but more important, the protean nature of the "toxemias of pregnancy" and the need of careful study for the prevention, diagnosis and treatment.

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OINTMENT OF YELLOW MERCURIC OXIDE (PAGENSTECHER'S OINTMENT)

ITS USE AND ABUSE

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How did yellow oxide of mercury salve—fine old panacea for all the ills of the eye and adjacent anatomic structures, known to every physician, surgeon, specialist, nurse, optician, housewife and grandmother—obtain its undisputed place in the pharmacopeia and in the hearts of our ailing countrymen? Introduced into ophthalmology for one specific and minor purpose, how did it become a universal cure-all? Long ago abandoned by most experts, why does it tower above the one other preparation embalmed in the memories of generations of medical students and share its place only with a bastard silver agglomeration as "something good for the eyes?"

Library and laboratory research, contemplation and questionnaires fail to reveal the answers to these questions, but the phenomenon is worthy of consideration and the history of the salve is interesting.

An account of Pagenstecher's ointment first appeared in English ophthalmologic literature in the second volume of the *Ophthalmic Review*, published in 1866. Alexander Pagenstecher of Wiesbaden had been goaded to a fine state of frenzy by reading a paper written by his English contemporary Mr. Spencer Watson, in which the use of setons was recommended for obstinate cases of "phlyctenular corneitis" and corneal ulcer. His courtesy to his English colleague was unfailing, but his skepticism is apparent in every sentence. His state of mind is evident from the fact that he wrote only one other unimportant paper in his long life and that in his yellow oxide paper he gave away a valuable, long-guarded, family secret. He succeeded in burying the barbarous seton, as today few practitioners have heard of the implement, much less seen one.

The object of this study is not to bury Pagenstecher's salve entirely, although we are convinced that the profession and the public would be as well or better off without it, but merely to restate in the originator's own words what it was intended for, how it should be used, and some of the untoward results of its misuse.

PREPARATION OF THE OINTMENT

Dr. Pagenstecher states that red mercuric oxide had been a favorite preparation for treating sore eyes for many years and constituted the basis of many secret remedies. It was applied in much the same indiscriminate fashion that the yellow oxide is today. He examined the red oxide under the microscope and was appalled to find that it consisted of sharp-cornered crystals of assorted sizes, somewhat broken up by the action of the mortar and pestle. He therefore went into conference with his apothecary, a Dr. Hoffman, a man who knew his chemistry. Pagenstecher did him the honor of quoting his own words, so it is now known exactly how the change from the red oxide to the yellow was effected and why.

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Read before the Eye, Ear, Nose and Throat Section of the California Medical Association at the sixty-first annual session, Pasadena, May 5, 1932.

The red crystalline oxide was prepared by the dry method of heating mercury in an open dish, collecting the oxide, and then triturating it in a mortar with a pestle. The amorphous yellow oxide was prepared by the wet method of adding to a solution of mercuric chloride ($HgCl_2$) an excess of a solution of potash (KOH). The supernatant fluid was then poured off; the precipitated oxide was washed with distilled water and dried with gentle heat.

Next came the question of a proper vehicle: "It must be soft without being too fluid lest the heavy oxide sink to the bottom, but when in contact with the body it must completely melt so that the preparation it contains may be quickly and uniformly diffused over the eye. Besides this peculiarity of behavior, the vehicle must be, as far as possible, indifferent in its behavior to the oxide, and exhibit the least possible tendency to rancidity, which might exert a deoxidizing, reducing action on the oxide."

He tried hog fat, butter, glycerin, glycerin ointment and mixed fats, giving the preference to the last. He recommended a mixture of spermaceti wax, almond oil and rose water, known as "cold cream," except that he omitted the rose water and varied the amount of almond oil, which he prepared himself, according to the weather. He also varied the percentage of oxide in accordance with Dr. Pagenstecher's wishes as determined by the individual patient's tolerance.

PAGENSTECHER'S RECOMMENDATIONS

We can do no better than quote directly from Pagenstecher's original paper, although his ponderous style must be condensed in places:

> The ointment is indicated in conjunctivitis and corneitis phlyctenulosa, and all the allied and resulting forms of corneal disease. I consider conjunctivitis and corneitis phlyctenulosa as purely local diseases of the conjunctiva and cornea, which become modified secondarily by the constitution of the patient. The anatomic, typically characteristic form consists in vesicles, or pustules, on a basis of infiltrated tissue of the conjunctiva. They are developed mostly near the cornea at the limbus. These vesicles soon pass, as the epithelium gets destroyed, into raw surfaces, the surrounding infiltrations becoming removed, a loss of substance in the form of an ulcer thus ensuing. We very often see the disease represented by one single vesicle on the cornea, which passes into an open ulcer.
>
> Ulcers at first of very limited extent appear to spread in area, or even invade the deeper layers of the cornea; then we have to contend with corneitis ulcerosa, or corneitis profunda, forms to which the ointment is often inapplicable.
>
> The good effect of the ointment is most displayed in the more chronic cases, after the originally greatly increased irritation of the cornea has somewhat abated, and the vascularization appears under the form of what is generally known as passive congestion. If the disease is in a more acute stage, the ointment may be applied from the very commencement, if care is taken to remove it completely from the conjunctival sac, as some, from the spasm of the lids which is associated with the photophobia, may get retained in the folds of the mucous membrane. The disease may possess the peculiarity of the recurrence of the phlyctenulae. Fresh phlyctenulae then form near the ulcer, always giving rise to increased irritation. Our attention is attracted by increased intolerance of light, lacrimation, and ciliary neurosis; an accurate examination then generally reveals small abscesses or phlyctenulae. As soon as the abscess, by breaking through the epithelial layer, has discharged its contents, the previous state of quiescence at once returns. These intercurrent attacks must not deter us from continuing the application of the ointment; for it rather accelerates than otherwise the course of the disease. Only when the base of the ulcer is extending deeper than Bowman's layer, into the cornea substance proper, must we exercise caution in using the ointment, and only try it in the first instance as a matter of experiment. If, from

too long continuance of the stage of reaction, we gather that the ointment irritates too much, we must wait for a day or two before trying it again. In such cases it is well to employ also remedies of known sedative effect, such as atropine, a compress-bandage at night, warm fomentations for a few hours. It may also happen that superficial ulcerations of the cornea under unfavorable circumstances pass into purulent corneitis; purulent infiltrations in the layers of the cornea, or hypopyon forms, and of course, here to apply the ointment is out of the question.

The contraindications for the ointment may be briefly enumerated, as they are easily self-comprehensible. As regards the other inflammations of the cornea, no good effect can be observed from yellow mercuric oxide. Corneitis purulenta, blenorrhoica or vasculosa, originating in granular lids and trachomatous pannus, generally get worse under it. In syphilitic corneitis parenchymatosa it has no effect one way or the other; but in the consequent obscurations of the cornea the ointment may be used, after all acute symptoms have completely vanished, to clear the cornea. If any iritis coexists, the ointment must be studiously avoided, as well as in all deep infiltrations and ulcerations of the cornea. I have often asked myself on what physiologic fact the good effect of the yellow oxide depends but must confess my inability to answer this question satisfactorily. Its immediate effect is undoubtedly irritant; for any previous vascularity is at once heightened on its application.

He finishes with a warning to be sure to wipe out any excess of the ointment with a clean piece of linen and questions the advisability of allowing the patient to use it at home because it may irritate too much. He did, however, permit the intelligent patient to use it at home. This is all in marked contrast to the way the ointment is prescribed and used today.

We think that a moment's reflection will show why the ointment is effective in the disease for which it was designed when used in the manner Pagenstecher recommended. The mechanical abrasive effect helped remove the sloughing foci of round cell infiltration after the phlyctenule had broken down into a superficial ulcer. The ointment by its very irritation produced an added supply of blood and lymph, which hastened repair. Dr. Walter Scott Franklin used the ointment with great skill in the treatment of phlyctenular conjunctivitis and keratitis and he, like Pagenstecher, obtained results when he applied the ointment himself and failed when the mother thought she could apply it at home. If the treatment had to be carried out at home, mild soluble antiseptics, hot compresses and atropine yielded better results.

The clue to why it came to be used for blepharitis, styes, pediculosis, foreign bodies, chalazia, dermoid cysts, folliculitis, senile ectropion, trachoma, and almost every other ocular disease lies in Pagenstecher's observation that, if it was applied too freely and left too long in contact with the tissue, sloughing occurred. The fact that the apothecary Hoffman made the ointment by hand in between his other duties gives the answer. The precipitate was not washed free of the alkali or the alkaline excess was not always maintained and the mercuric chloride was present in small amounts. Either situation would have a profound effect on the bacterial flora of the conjunctival sac, perhaps sometimes even a beneficial effect.

We know of no existing samples of Hoffman's workmanship, but it may be safely assumed that the modern manufacturer has in many ways improved on its purity and uniformity. Herman Pagenstecher,[1] Alexander's younger brother, gives a few more sidelights on the family's contribution to ophthalmology. He tells how the fresh butter, mixed fats and all other vehicles were given up in favor of American petrolatum. This soon became the favorite vehicle and with slight variations remains so today.

1. Pagenstecher, Herman: Klin. Monatsbl. f. Augenh., 1898.

USE OF THE OINTMENT IN CALIFORNIA

The salve came to California very early and was probably first used by Dr. Adolph Barkan. Later Dr. Ferrer, another of San Francisco's early practitioners of ophthalmology, had Berthold Broemmel, the father of the present head of the firm of druggists of that name, and a man trained in the same traditions as Hoffman, make up a cone of cacao butter in which the oxide was mixed and cast by hand. These cones are still called for by former patients in spite of the fact that the oxide does not have enough antiseptic value to prevent the cacao butter from becoming rancid. Dr. Barkan [2] says: "It is likely that I introduced its use in California about 1869. Its fame spread. It was suggested that I patent the unguent as 'Barkan's Golden California Eye Salve'. I preferred the straight method of medical practice, which I urge all members of our beautiful profession to follow. It leads to honor and success."

REPLIES TO A QUESTIONNAIRE

Dr. Adolph Barkan's decision and the weight of his authority certainly contributed to the wide use of the ointment in San Francisco and adjoining regions, but it does not account for the frequency with which it is prescribed by graduates of widely separated medical schools for almost all eye diseases. A questionnaire was sent to ten American professors of ophthalmology in the leading medical schools of the country and to two well known emeritus professors. They were simply asked to list the diseases for which they considered the ointment useful and to state what the teaching in regard to its use was in the clinics of which they were, or had been, chiefs. Courteous personal replies to these apparently silly questions were received from all but two. In one case, we suspect, the questions were turned over to an assistant, who wrote the usual reply without much thought. Out of ten replies, the results were as follows:

For blepharitis	it was used by seven.
For phlyctenules	it was used by three.
For ulcer	it was used by two.
For conjunctivitis	it was used by two.
For chalazion	it was used by two.
For hordeolum	it was used by two.
For folliculitis	it was used by two.
For corneal nebulae	it was used by two.
For last stages of interstitial keratitis	it was used by one.

Of those who used it, four stressed its irritating properties. Of those who did not, one said frankly that it was no good for any purpose; one doubted its value and almost always used something else. One eminent eye pathologist said that his colleagues used it for all sorts of lesions but that he himself had given it up for all conditions except pediculosis.

Dr. Dohrmann Pischel,[3] now visiting the European eye clinics, assures us that the preparation is much less frequently used abroad than in America. Its use is limited to eczematous or phlyctenular keratitis and conjunctivitis. Old indolent ulcers and occasionally blepharitis are treated with it but it is regarded as much too irritating for routine use.

Careful search of the literature reveals not one paper in English, on the use of the preparation since 1866. A

2. Barkan, Adolph: Personal communication to the authors, March 15, 1932.

3. Pischel, Dohrmann: Personal communication to the authors, April 8, 1932.

Frenchman wrote an article in 1904 questioning the advisability of its indiscriminate and frequent use and casting doubt on its value.

ACTION OF THE OINTMENT

The physical properties of the substance have been mentioned and are probably the dominant factor in its action and certainly the reason for its irritating qualities and constitute the main objection to its indiscriminate use. Ulcers may be kept from healing almost indefinitely by a thorough daily massage with the ointment. Such treatment of minor corneal abrasions certainly increases the scarring of the cornea as well as the temporary disability and prolongs the period of recovery, particularly in industrial cases treated by general surgeons. We have seen cases in which granules of the substance were visible with the slit lamp and corneal microscope distributed through corneal scars, over which the epithelium had finally regenerated in spite of the treatment.

The consideration of its chemical properties is not so simple. Although it is classified as insoluble in the pharmacopeia and is the last mercurial one would think of using in the treatment of syphilis, for example, it does have definite solubility in water. Mercuric chloride will inhibit the growth of Staphylococcus aureus in dilutions of 1:100,000, some authors say 1:300,000. Kolmer believes that the limit of mercurial chemotherapy has by no means been reached and describes one of his own compounds designated merely as number 99 which will do the same thing in a dilution of 1:5,000,000. Mercuric oxide is so slightly soluble that its phenol coefficient cannot be determined. However, Dr. Reddish[4] devised a method of testing various forms of antiseptics; he reported that yellow oxide inhibits the growth of Staphylococcus aureus. But in our confirmation of these experimental results we secured no growth in the control experiment using petrolatum, presumably because the conditions are anaerobic.

Letters to five well known firms who manufacture the ointment, in regard to the antiseptic properties of their product, brought four replies. One chief chemist gave no opinion. One called attention to the fact that May, in his textbook on ophthalmology, does not classify the substance as an antiseptic. One felt that it was impossible to estimate its value on the basis of laboratory experiments at all. The fourth had also repeated Reddish's experiments and found, as we did, that yellow oxide would inhibit the growth of Staphylococcus aureus on standard Reddish plates and that the petrolatum control would do the same thing for twenty-four hours. If the incubation was continued, however, the organisms grow under petrolatum but not under the yellow oxide ointment. There was no zone of inhibition about the streaks of yellow oxide ointment as there is in the case of soluble germicidal ointments. It is probably true that it is impossible to reproduce in the laboratory exactly the conditions that are found in the eye and consequently the value of the preparation must in the last analysis be fixed by clinical results. Here one must beware of the usual reasoning of the layman, and often of the physician, that a treatment is effective because the disease in that one case got well after the treatment was applied.

We have always felt that the favorable results reported in blepharitis, in which most of the authorities agree on the usefulness of the preparation, were due to the vehicle softening the crusts, which allows their removal without disturbing the tissue of the lid margins and to the prevention of maceration of the tissue by the excess of tears. We find that petrolatum alone or with hydrous wool fat is more agreeable to the patient and just as effective as ointment of yellow mercuric oxide in this condition. Blepharitis often has a constitutional cause and all local treatments are liable to fail if such is the case.

We cannot see how a relatively insoluble drug, each particle of which is thickly coated with an insoluble vehicle, can diffuse into the skin, conjunctiva or tears in sufficient quantity to be of any value as an antiseptic. This stand is backed by the fact that comparatively few of the authorities value it in frankly pyogenic conditions.

Ulcers of the cornea have already been discussed and in pediculosis it is the petrolatum that fills the spiracles of the arthropod and shuts off the supply of oxygen and thus leads to the death of the parasite.

This brings us back to phlyctenular conjunctivitis and keratitis, the original condition for which it was introduced and for which we believe it is still valuable at a certain stage. Fortunately, with the improvement in living conditions and the growth of knowledge of infant feeding, phlyctenules are now a rarity and we feel sure that an ophthalmologist with an active practice actually needs about one tube of Pagenstecher's ointment a year. We doubt the wisdom of ever prescribing it for home use.

490 Post Street.

4. Reddish, G. F.: Testing Antiseptics, J. Am. Pharm. A. **16**: 653 (July) 1927.

STREPTOCOCCIC PUERPERAL SEPSIS

REPORT OF AN EPIDEMIC

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During a period of nine days, between Oct. 3 and Oct. 11, 1930, inclusive, forty-six women were delivered at Ancker Hospital, the city and county hospital of St. Paul. Among these, puerperal sepsis developed in six (13 per cent), and three (50 per cent) of the infected patients died. October 3, five women were delivered, in three of whom sepsis developed, two of them dying. October 4, six women were delivered, of whom one became infected and died. Another patient, delivered October 11, became infected and recovered. The first two women who became infected had been delivered by forceps; the other four had had spontaneous deliveries. Vaginal examinations before delivery were made in only the two operative cases. All the infected patients had normal temperatures on admission to the hospital.

October 12, two days after the first patient had died and nine days after the beginning of the epidemic, the remaining five patients were transferred to the contagious division of the hospital and preparations were made to open a separate obstetric division for newly admitted patients. No further cases developed, however, and the regular obstetric division was not closed. During the epidemic, one febrile patient in the obstetric division, who did not present the clinical picture of sepsis, was transferred to the contagious division, and

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after further observation her temperature was attributed to acute cholecystitis.

BACTERIOLOGIC NOTES

Throat cultures were taken of staff and house physicians and nurses shortly after the last case developed. One physician and one nurse were found to have streptococci in their throats, but neither of them had attended the deliveries of any of the infected patients. An acute streptococcic sore throat developed in a nurse two weeks after scrubbing for the deliveries of two of the women who developed sepsis. The same intern delivered or assisted in the delivery of every infected case, but his throat culture was negative and he gave no history of sore throat or infection of the upper respiratory tract. Cultures of water from sterilizers yielded staphylococci from the cold water tank in the operating suite, and cultures of supplies yielded staphylococci from packages of autoclaved gauze. For some weeks before and during the epidemic, numerous wound infections had occurred in surgical cases in the hospital. A defective autoclave was discovered and repaired.

CLINICAL OBSERVATIONS

The onset of sepsis in every case was marked by a definite chill and an elevation in temperature varying from 101 to 104 F. The time of onset of these symptoms in relation to the time of delivery occurred eight hours post partum in one case, two days post partum in two cases, four days post partum in two cases, and five days post partum in one case. Of the fatal cases, one patient died on the seventh day, one on the eleventh day and one on the twelfth day following the onset. Temperatures became normal in the three patients who recovered on the seventh, eighth and twelfth days, respectively. After the initial rise, the temperature ranged from 104 to 106 F. in the fatal cases and a degree or two lower in the cases in which recovery occurred. The pulse rate varied directly with the rise and fall of the temperature.

Lower abdominal pain at the onset of fever and continuing throughout the course of the fever was present in five of the six cases. Abdominal distention was a notable sign in three cases, only one of which was fatal. Diarrhea was noted twice, being severe in one fatal case.

Leukocytosis ranged from 12,000 to 18,000 in all cases except one fatal case, in which it rose to 33,500. Polymorphonuclear leukocytes varied from 85 to 95 per cent. Hemoglobin readings were relatively high, varying from 70 to 85 per cent. Single blood cultures were taken in three cases, and two blood cultures were taken in one case. Only one culture (in a fatal case) was reported positive for hemolytic streptococci.

AUTOPSY OBSERVATIONS

Autopsies were obtained in all three fatal cases. In every one there was a purulent peritonitis and the coils of intestine were matted together with a yellow, fibrinous exudate. In every case the uterus was fairly well involuted. The endometrium in two cases was covered with an inflammatory exudate; in the third, it was hemorrhagic. The consistency of the uterus in two cases was boggy, in one, firm. No thrombosis of the pelvic veins was evident. Bronchopneumonia was present in all cases.

TREATMENT

The main therapeutic agent used was blood transfusion. Every patient but one (a patient who recovered) received from one to three blood transfusions of from 300 to 600 cc. of citrated blood, usually 500 cc. One patient receiving three transfusions recovered. Of two patients who received two transfusions each, one died and one recovered. Two patients, who received one transfusion each, died. Late in the course of the disease in five cases, quinine dihydrochloride was given daily in 5 grain (0.3 Gm.) doses intramuscularly. In one fatal case 20 cc. of antistreptococcic serum was given intravenously. Otherwise, treatment was supportive, and subcutaneous and intravenous saline and dextrose solutions were used freely.

COMMENT

While this epidemic was small and of short duration, it was sudden and insidious in its onset and alarming in its possibilities, especially in view of Watson's experience with an outbreak of puerperal sepsis in New York in 1927.[1] Nothing comparable to it had occurred in the city and county hospital of St. Paul for sixteen years.

The source of the infection (as in the New York epidemic) was never satisfactorily explained. One can only speculate about it. Was it brought to the obstetric division by one of the three women delivered on October 3 who became septic? Did a nurse giving perineal care during the period from October 3 to 11 unwittingly start or spread the infection? Did the intern who attended all infected cases during that period carry virulent streptococci in his nose and throat? Were the sterilizing facilities of the hospital at fault?

Clinically, the cases followed typical courses. The only variations observed were the relatively high hemoglobin readings, which indicated the low hemolytic activity of the particular strain of streptococci responsible for the epidemic.

Nothing new was added to our previous knowledge of treating sepsis. The empirical use of quinine dihydrochloride intramuscularly did not seem to alter the course of the infection. It is worthy of note in even as small a group of cases as this, however, that the mortality varied inversely with the number of blood transfusions given.

The epidemic ceased as soon as all infected cases were transferred to the contagious division of the hospital.

SUMMARY

An epidemic of six cases of streptococcic puerperal sepsis, with a mortality of 50 per cent, occurred among forty-six women delivered in a charity hospital during nine days. Clinical observations were made on the mode of onset, temperature elevations and pulse rates, gastro-intestinal and abdominal symptoms and blood conditions. Autopsy observations of peritonitis, endometritis and bronchopneumonia were made. Treatment was given by repeated blood transfusions, quinine dihydrochloride, antistreptococcic serum and saline and dextrose solutions intravenously.

CONCLUSIONS

1. Hospital epidemics of streptococcic puerperal sepsis are rare.

2. The sources of such epidemics are difficult and usually impossible to determine.

3. Treatment is unsatisfactory, but the administration of frequent, small blood transfusions (from 300 to

1. Watson, B. P.: An Outbreak of Puerperal Sepsis in New York City, Am. J. Obst. & Gynec. **16**: 157-179 (Aug.) 1928.

500 cc.) is still the most effective therapeutic agent in combating the disease.

4. Prompt isolation of infected patients, preferably in a contagious division or a contagious hospital as soon as the epidemic is recognized, offers the best hope of limiting its spread.

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POSTOPERATIVE PULMONARY COMPLICATIONS

II. CARBON DIOXIDE AS A PREVENTIVE IN A CONTROLLED SERIES

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The surgical service of any large general hospital is still faced with the problem of prevention of postoperative pulmonary complications. The numerous studies made during the past fifteen years have consistently shown the frequency of these complications. Many theories have been proposed regarding the etiology and treatment of them, but none have been accepted as entirely satisfactory. Certain facts, however, are becoming definitely established and an intensive study, made at the Massachusetts General Hospital during the past two years, has given new emphasis to some of these points. Statistical observations are published in another article,[1] but in the main they have shown that: an overwhelming majority of postoperative pulmonary complications occurs after laparotomy and herniorrhaphy (14.0 per cent); they are especially frequent after operations on the stomach, gallbladder and intestines (40.2, 18.8 and 20.8 per cent, respectively); they occur at least twice as frequently in men as in women, and, further, the patient's general condition and sepsis or perforation play a definite part. Statistically, the type of anesthesia bears no relation to the development of complications.

It is true that, although sex, general condition and sepsis are important, the abdominal operation itself is the one practically constant factor in the development of pulmonary complications. Consequently, studies have been made to determine to what extent interference with respiration, following abdominal operations, leads to pulmonary pathologic changes. It has been shown that these operations produce marked reduction in vital capacity [2] and that respiration becomes more rapid and shallow and that total lung volume is decreased. A recent study made in this hospital by Beecher gives new information on these points. In short, after abdominal operation, the lung assumes the position of normal expiration, or what Henderson [3] calls the "acapnial" position. This condition of "hypoventilation" [4] apparently allows the collection of secretion in the bronchi and atelectasis or pneumonia may result.[5]

The type of complication that follows such interference with the respiration develops almost invariably in the first three postoperative days and is usually accompanied by fever, leukocytosis, cough and purulent sputum. It has been variously diagnosed as bronchopneumonia, "pneumonitis" [6] and collapse (or atelectasis). The percentage of cases that can be diagnosed as true bronchopneumonia is very small, as is also the percentage of cases that can be diagnosed as typical massive collapse with involvement of the greater part of one lung. Between these two apparently definite entities lies a great majority of cases which are either pneumonia, pneumonitis or partial collapse and which cannot yet be satisfactorily classified. It has not seemed wise, therefore, in this study to separate pneumonia from collapse. Furthermore, cases of definite pulmonary embolus, exacerbation of pulmonary tuberculosis, empyema and the like have been excluded because they do not belong to the group of complications that occur soon after operation and seem to be associated with interference with respiration. In the pneumonia and collapse group, however, interference with respiration is at least partly responsible for the complication, and restoration of normal respiration had seemed to offer a reasonable hope for its prevention or cure. Of the various methods available, Henderson's [7] recommendation of hyperventilation by the inhalation of carbon dioxide has received most attention and has been employed to a greater or less extent by many investigators.

Scott and Cutler [8] compared a series of 1,000 patients at the Strong Memorial Hospital, who had had carbon dioxide inhalations during or after operation and in only 0.2 per cent of whom postoperative massive collapse developed, with another series of 2,000 patients at the Lakeside Hospital, in whom hyperventilation was not employed (and who were consequently used as a control series) and in 0.6 per cent of whom massive collapse developed. Conclusions cannot be drawn from such a study, since the control group is in a different hospital, in a different year and the complications include definite massive collapse only and not "pneumonia." Scott [9] later reported on 2,850 patients, in 85 per cent of whom hyperventilation was employed with only 3 cases of massive collapse, while in 15 per cent hyperventilation was not employed, with 4 cases of collapse. Shatzky [10] reported 38.5 per cent pulmonary complications in a series of 320 untreated patients in 1926-1927, as compared with 22 per cent complications in 264 patients who had hyperventilation induced by carbon dioxide postoperatively in 1927-1928. Sise, Mason and Bogan [11] cite a much smaller series of cases in which 4.2 per cent of 48 patients, treated with carbon dioxide inhalations, developed postoperative pneumonia and 2 per cent of 49 patients, not treated,

Study made in the Surgical Services of the Massachusetts General Hospital by the author, a member of the medical service, aided in part by the Delamar Mobile Research Fund of Harvard University Medical School.

1. King, D. S.: Postoperative Pulmonary Complications: I. A Statistical Study Based on Two Years' Personal Observation, Surg., Gynec. & Obst., to be published.

2. Churchill, E. D., and McNeil, Donald: The Reduction in Vital Capacity Following Operation, Surg., Gynec. & Obst. **44:** 483-488 (April) 1927. Head, J. R.: The Effect of Operation on the Vital Capacity, Boston M. & S. J. **197:** 83-87 (July 21) 1927. Powers, J. H.: Vital Capacity, Its Significance in Relation to Postoperative Pulmonary Complications, Arch. Surg. **17:** 304-323 (Aug.) 1928.

3. Henderson, Yandell: Acapnia as a Factor in Postoperative Shock, Atelectasis and Pneumonia, J. A. M. A. **95:** 572-575 (Aug. 23) 1930.

4. Muller, G. P.; Overholt, R. H., and Pendergrass, E. P.: Postoperative Pulmonary Hypoventilation, Arch. Surg. **19:** 1322-1345 (Dec.) 1929.

5. Coryllos, P. N.: Postoperative Apneumatosis (Atelectasis) and Postoperative Pneumonia, J. A. M. A. **93:** 98-99 (July 13) 1929.

6. Whipple, A. O.: A Study of Postoperative Pneumonitis, Surg., Gynec. & Obst. **26:** 29-47 (Jan.) 1918.

7. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: The Therapeutic Use of Carbon Dioxide After Anesthesia and Operation, J. A. M. A. **74:** 783-786 (March 20) 1920.

8. Scott, W. J. M., and Cutler, E. C.: Postoperative Massive Atelectasis: II. The Effect of Hyperventilation with Carbon Dioxide, J. A. M. A. **90:** 1759-1763 (June 2) 1928.

9. Scott, W. J. M.: Massive Atelectasis and Postoperative Pneumonia, J. A. M. A. **93:** 101-103 (July 13) 1929.

10. Shatzky, A. V.: The Use of Carbon Dioxide with Some Anesthetics and in Postoperative Complications, Vestnik Khir. **14:** 219-224, 1928.

11. Sise, L. F.; Mason, R. L., and Bogan, I. K.: Prophylaxis of Postoperative Pneumonia: Preliminary Report of Some Experiments After Upper Abdominal Operations, Anesth. & Analg. **7:** 187-190 (May-June) 1928.

developed complications. This group, although well controlled, is small but is an argument against rather than for the use of carbon dioxide. Fischer [12] observed only 7 cases of bronchitis and 1 of pneumonia following 300 gynecologic operations, in patients who had been given carbon dioxide inhalations. He, however, had no control series. Aza [13] reported a series of 48 patients having abdominal operations, followed by routine carbon dioxide inhalations, none of whom developed pulmonary complications.

Other authors [14] report good results from the use of carbon dioxide inhalations as a preventive measure for postoperative pulmonary complications, stating with apparent conviction that its use has materially reduced the incidence of complications among their patients who were operated on. They, however, cite no definite series of cases. Still others [15] make only casual mention of the prevention of postoperative pulmonary complications among the many uses of carbon dioxide inhalations. Brunn and Brill [16] make a general statement in regard to the benefit of the method, observing that their records showed an increase in pulmonary complications during the use of carbon dioxide inhalations, but they also state that this apparent increase was due to more careful studying and recording of complications. They do not have a control group and so have not reported figures. Briscoe [17] decries hyperventilation with carbon dioxide as drawing secretion deeper into the lungs and as being unpleasant to the patient.

In addition to the unsatisfactory evidence presented in these articles, three partially controlled series, observed at the Massachusetts General Hospital, had given the impression that carbon dioxide did not reduce the percentage of pulmonary complications. In one of these series, carbon dioxide was given to all patients before they left the operating room, and in the other two groups hyperventilation was induced several times a day for the first three postoperative days. This early experience was therefore disappointing, but the method still seemed the most reasonable one at our disposal, and we determined to study an absolutely controlled and very carefully followed series in order that definite conclusions might be drawn.

12. Fischer, Erich: Die intraoperative und postoperative Kohlensäureinhalation, eine wertvolle Unterstützung der Inhalationsnarkose, Zentralbl. f. Gynäk. **52**: 2010-2013 (Aug. 11) 1928.

13. Aza, Vital: Hiperventilación pulmonar postoperatoria, Med. ibera **2**: 149-151 (Aug. 9) 1930.

14. Graham, E. A., in discussion on Muller, Overholt and Pendergrass (footnote 4, p. 1342). Doppler, Karl: Die Anwendung der Kohlensäureinhalation im chirurgischen Betrieb, speziell bei Schädigungen der Atemzentrums und beim operativen Shock, Deutsche Ztschr. f. Chir. **219**: 308-317, 1929. Henderson, Yandell, and Haggard, H. W.: Hyperventilation of the Lungs as a Prophylactic Measure for Pneumonia, J. A. M. A. **92**: 434-436 (Feb. 9) 1929. Henderson, Yandell: The Physiology of Atelectasis, ibid. **93**: 96-98 (July 13) 1929. Lidzki, A.: O wdychiwaniu CO_2 jako środku leczniczym i zapobiegawczym, Polska gaz. lek. **8**: 496-497 (June 30) 1929. Mouzon, J.: L'inhalation de gaz carbonique: stimulant et régulateur de la fonction respiratoire, Presse méd. **37**: 68-71 (Jan. 16) 1929. Fuller, C. J.: Analysis of Postoperative Pulmonary Complications, Based on Cases at University College Hospital, London, in One Year, Lancet **1**: 115-121 (Jan. 18) 1930. Moore, J. A.: Postoperative Pulmonary Atelectasis, J. Michigan M. Soc. **29**: 182-190 (March) 1930. Coryllos, P. N.: Postoperative Pulmonary Complications and Bronchial Obstruction: Postoperative Bronchitis, Atelectasis (Apneumatosis) and Pneumonitis, Considered as Phases of the Same Syndrome, Surg., Gynec. & Obst. **50**: 795-827 (May) 1930. Overholt, R. H.: Postoperative Pulmonary Hypoventilation, J. A. M. A. **95**: 1484-1489 (Nov. 15) 1930. Mogilew, M.: Bedeutung der Kohlensäure in der Prophylaxe der postoperativen Komplikationen, Zentralbl. f. Gynäk. **54**: 2015-2019 (Aug. 9) 1930.

15. Lundy, J. S.: Carbon Dioxide as an Aid in General Anesthesia, J. A. M. A. **85**: 1953-1955 (Dec. 19) 1925. Dzialoszynski, A.: Apparatus zur Kohlensäureinhalation und bildliche Darstellung der Kohlensäureanwendung am Kranken, Deutsche Ztschr. f. Chir. **205**: 22-27, 1927. Hewer, C. L.: The Therapeutic Value of Carbon Dioxide, China M. J. **41**: 852-858 (Oct.) 1927. Van Allen, C. M., and Lindskog, G. E.: Obstructive Pulmonary Atelectasis, Arch. Surg. **21**: 1195-1213 (Dec.) 1930.

16. Brunn, Harold, and Brill, Selling: Observations on Postoperative Pulmonary Atelectasis, Ann. Surg. **92**: 801-837 (Nov.) 1930.

17. Briscoe, Charlton: The Mechanism of Inflation of the Lungs and the Influence of Deflation on Postoperation Complications, Lancet **2**: 513-520 (Sept. 5) 1931.

SELECTION OF CASES

Previous studies had made so clear the high incidence of pulmonary complications following abdominal operation and hernia repair that in selecting cases for treatment the present study was confined to this group. Further, since the sex of the patient and the type of abdominal operation play so important a part, the patients were divided according to sex and then grouped according to the type of abdominal operation. Every other patient, in the subgroups of each sex, was treated. This alternation gave, for instance, a group of men who had had operations on the stomach and who had had hyperventilation induced, to compare with an equal number of men who had had operations on the stomach but who had not had hyperventilation induced. These groups could in turn be compared with female patients, treated and untreated, who had had operations on the stomach. Thus, statistics were available for male and female cases, treated and untreated, in the different groups of abdominal operations and hernia repair.

At the Massachusetts General Hospital the general surgical services perform between 90 and 120 operations for abdominal conditions and hernias each month. During our period of study, which ran from Dec. 1, 1930, to Dec. 15, 1931, 648 treated cases were available to compare with 667 controls. From August 1 to 15, no treatments were given. From August 15 to September 8, special intensive treatment was given in a particular group of cases to ascertain whether frequent and prolonged hyperventilation would make a difference in the percentage of complications in the so-called bad risk group; namely, male patients who had had operations on the stomach, gallbladder and intestine.

TREATMENT SCHEDULE AND PERSONNEL

The carbon dioxide inhalations in our series were given as a postoperative routine for three days, beginning after the patient had returned to the ward. Previous to this controlled series, carbon dioxide inhalations had been given for seven months in the operating room after every laparotomy and operation for hernia. During this period the pulmonary complications in this group reached 13.1 per cent. This was a higher percentage than had ever been noted before, but more careful observation and recording were probably responsible for the apparent great increase. However, it was evident that the "de-etherization" in the operating room was not materially reducing the percentage of pulmonary complications, and the possibility existed that carbon dioxide inhalations, given while the patient's cough reflexes were still abolished by the anesthetic, might cause a deeper inhalation of bronchial secretion and so perhaps do harm. In this study, therefore, it seemed best not to give the inhalations until the patient was back in the ward and at least partially recovered from the anesthesia.

A full time graduate nurse administered the carbon dioxide. The same nurse was employed, during the day, throughout the entire period of the study, insuring uniformity of treatment and the same careful observation and reporting of pulmonary symptoms, in both the treated and the untreated groups. During seven of the twelve months, a second full time graduate nurse worked at night.

APPARATUS AND DOSAGE

Four different methods of giving carbon dioxide were employed. The first was the use of a rebreathing tube with a mouthpiece and nose clip, by means of which the patient rebreathed his own carbon dioxide

and thus saved the expense and trouble of using tanks of either carbon dioxide or carbon dioxide and oxygen mixture. This method was the suggestion of Dr. J. H. Means. The tubes used were of the size and texture of those used with the ordinary spirometer. Their diameter was 1¼ inches, their length was from 8½ to 9 feet, and their capacity was approximately 1,500 cc. Of course, the use of such a tube lowers the amount of oxygen in the inspired air, and there is danger of partial anoxemia. Rebreathing was stopped, however, at the first indication of cyanosis. A short insert of metal tubing allowed the removal of the first 2 feet of the rubber tubing so that it could be boiled with the mouthpiece after each treatment. The remainder of the tube was kept by the bedside of the patient during the three days of the treatment and was not used for any other patient during that time. In some cases an ordinary anesthesia mask was attached to the rubber tube instead of the mouthpiece. The apparatus could then be used for a patient who could not, or would not, keep his lips tightly closed over the rubber mouthpiece.

With the length of rebreathing tube used, most patients could not keep up the hyperventilation comfortably for more than three minutes, and practically all patients would breathe with increasing depth for the first half minute and then maintain a maximum level for about two minutes. During the first four months, treatment was given in this way three times a day for the first three postoperative days and only during the daytime. During the next three months similar treatment was given every four hours, day and night. During the following month, the night nurse was omitted and the number of treatments was again dropped to three, during the day only.

The second method was the use of small tanks of either pure carbon dioxide or carbon dioxide and oxygen mixture of from 5 to 25 per cent carbon dioxide. This gas was given by means of a funnel held at varying distances from the patient's nose. This method of hyperventilation was employed with a few patients who objected to the mouthpiece and nose clip and others who could not hold the mouthpiece. With this method, hyperventilation could be induced from five to ten minutes either three or six times a day. These small tanks were also used on certain patients during the last three months of study because the large tank could not be conveniently transported to a distant ward. The total number of cases, however, was small, only thirty-nine patients having been treated in this way.

The third apparatus used was the original Henderson inhalator,[7] in which carbon dioxide is mixed with room air rather than with pure oxygen. This apparatus, used in the Massachusetts General Hospital previously by White,[18] was employed during the last three and a half months of the study. The treatment was given at least six times a day and, in most instances, eight or ten times. Some patients could take the inhalations for only five minutes at a time, but most could tolerate them for ten minutes. The amount of carbon dioxide used with this inhalator was left to the discretion of the nurse who was giving the treatments because, as noted by other observers, different patients demonstrate varying responses to a given percentage of carbon dioxide. Our studies with the next type of apparatus to be described, however, showed that these patients were receiving, for the most part, a mixture containing about 8 per cent carbon dioxide.

18. White, J. C.: Deetherization by Means of Carbon Dioxide Inhalations, Arch. Surg. 7: 347-370 (Sept.) 1923.

The fourth method employed was the use of separate tanks of oxygen and carbon dioxide with a Foregger flow-meter[19] on each tank, so that the mixture of oxygen and carbon dioxide could be regulated to meet individual requirements. This apparatus was cumbersome and the expense of oxygen and carbon dioxide tanks high; consequently, this method was used only long enough to determine the approximate percentage of carbon dioxide being given with the original Henderson inhalator. It was found that in most cases the best hyperventilation for a ten minute period was given by a mixture of 8 per cent carbon dioxide and 92 per cent oxygen. The amount of hyperventilation induced by this mixture was apparently the same as that induced by the Henderson apparatus as previously described. (Gas analysis determined that, when the flow-meters were set to give a 10 per cent mixture of carbon dioxide, the actual amount delivered to the masks was 8 per cent. Similarly, when the flow-meters were set for a 5 per cent mixture, the patient was actually getting 4 per cent.) It should be noted that in many postoperative cases cough and expectoration required the removal of the mask at intervals, so that it would be an error to assume that all the patients were constantly inhaling an 8 per cent carbon dioxide mixture. Of the eight cases treated with this apparatus, a complication developed in one case, giving the usual 12.5 per cent of pulmonary complications.

TABLE 1.—*Methods of Carbon Dioxide Administration*

Period of Time and Method Used	Treated			Untreated		
	Number of Operations	Postoperative Pulmonary Complications		Number of Operations	Postoperative Pulmonary Complications	
		Number	Per Cent		Number	Per Cent
December, 1930, through March, 1931 Rebreathing tubes used for an average of two minutes, three times a day	206	25	12.1	211	45	21.3
April through June, 1931 Rebreathing tubes used for an average of two minutes, six times a day	177	24	13.6	185	13	7.0
July, 1931 Rebreathing tubes used for an average of two minutes, three times a day	56	6	10.7	65	6	9.2
Sept. to Dec. 15, 1931 Henderson carbon dioxide inhalator used for an average of five to ten minutes, six to ten times a day	209	25	12.0	206	23	11.2
Totals						
Rebreathing tubes	439	55	12.5	461	64	13.9
Carbon dioxide inhalator	209	25	12.0	206	23	11.2

RESULTS

For the purposes of this report, all cases demonstrating definite parenchymal involvement have been recorded as pulmonary complications. With few exceptions, clinical signs have been checked by x-rays and only cases showing definite roentgen evidence have been included. Cases were omitted if the roentgen evidence was doubtful or could be explained by the taking of the film while the lungs were in the position of expiration.[4] ("Bronchitis" is not reported in this study as a complication except in the one table in which it is recorded separately.)

Table 1 shows the number of cases treated by each of the different methods and the percentage of pulmonary complications that have occurred in each of these

19. This apparatus was kindly lent to us by Dr. C. C. Lund.

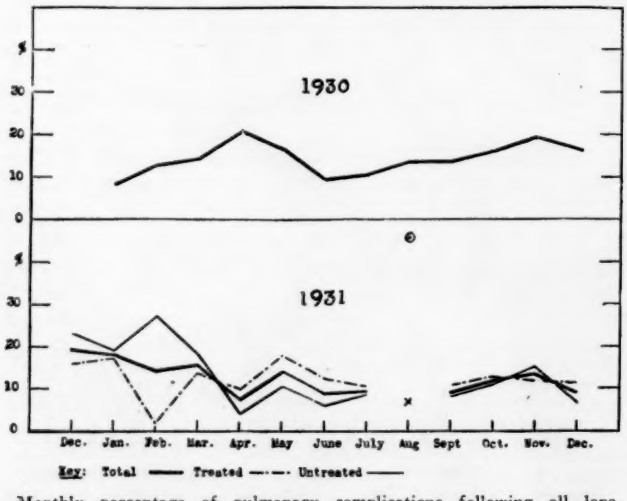
groups. These percentages are, in turn, compared with the untreated cases for the same period.

The accompanying chart represents graphically the monthly percentage of pulmonary complications occurring in the treated and untreated groups, and, as a mean between them, the monthly percentage of the series as a whole.

A study of this table and chart brings out the following points:

1. During the first four months, when two-minute hyperventilation was being induced three times in twenty-four hours, there was a definitely smaller percentage of complications in the treated group. This was particularly noticeable in February, when the incidence in the treated group was 2 per cent as opposed to 27 per cent in the untreated group. No amount of study has been able to explain this unusual month. It is still true, however, that in each of the first four months there was a lower percentage of complications in the treated group.

2. During six of the seven months of the experiment, when the patients were getting six short treatments by the rebreathing tubes, or eight or ten longer



Monthly percentage of pulmonary complications following all laparotomies and hernia operations in 1930, and following the same type of operation included in the carbon dioxide study in 1931.

treatments with the Henderson inhalator, the percentage of complications in the untreated cases was less than in the treated group. (As will be noted from the table, during the month of July the number of treatments was again reduced to three, but without a return of more favorable results in the treated cases.) This unexpected reversal was due, not to an appreciable increase in the percentage of complications in the treated group, but to an extraordinary drop in the percentage of complications in the untreated group.

3. An entirely satisfactory explanation of this drop cannot be given. We have studied the problem from all angles and believe that the only change in the care of the patients of this untreated group lies in the fact that after the first few months of our special study of pulmonary complications attention was being focused on the need of adequate bronchial drainage. Because of this, patients were having postural change (a method which has been advocated by other authors [20]) every one or two hours.

20. Hurxthal, L. M.: The Use of Postural Drainage in Postoperative Pulmonary Complications, S. Clin. North America **8**: 115-117 (Feb.) 1928. Rouillard, J.: Le collapsus aigu du poumon; complication postopératoire, Presse méd. **37**: 36-38 (Jan. 9) 1929. Overholt (footnote 14); Brunn and Brill (footnote 16).

4. As already noted, the definite alternation of treatment was not carried out in August and early September, and the curve in the chart is broken at this point. The dot, however, denotes that the percentage of complications in the group treated was very much higher than in any other month. This is explained by the fact that during this period fifteen cases of the group that our past experience had shown to be very bad risks—the male patients who had had operations on the

TABLE 2.—*Abdominal and Hernia Operations: Treated Series*

Type of Operation	Total			Male			Female		
	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent
Stomach and duodenum	47	21	44.7	34	18	52.9	13	3	23.1
Gallbladder	76	10	13.2	14	5	35.7	62	5	8.1
Intestine	44	12	27.3	27	11	40.7	17	1	5.9
Appendix	198	19	9.6	99	14	14.1	99	5	5.1
Hernia	94	7	7.4	77	7	9.1	17	..	....
Gynecologic laparotomy	137	8	5.8	..	..	....	137	8	5.8
Miscellaneous laparotomy	52	3	5.8	30	3	10.0	22	..	...
Total	648	80	12.3	281	58	20.6	367	22	6.0

stomach, gallbladder and intestine—were treated with carbon dioxide inhalations for about ten minutes every two hours during the day. In spite of this intensive treatment, however, complications developed in 46.6 per cent of this group just as they had in the past. This observation is important because it shows again that the percentage of complications depends, to a very great extent, on the type of operation and the sex of the patient. In the 168 untreated patients who were operated on during this period only 7.1 per cent developed complications, as indicated by the cross on the chart.

TABLE 3.—*Abdominal and Hernia Operations: Untreated Series*

Type of Operation	Total			Male			Female		
	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent	Total Operations	Postoperative Pulmonary Complications: Number	Postoperative Pulmonary Complications: Per Cent
Stomach and duodenum	43	15	34.9	35	14	40.0	8	1	12.5
Gallbladder	75	14	18.7	13	5	38.5	62	9	14.5
Intestine	51	10	19.6	32	5	15.6	19	5	26.3
Appendix	206	22	10.7	105	19	18.1	101	3	3.0
Hernia	95	9	9.5	82	8	9.8	13	1	7.7
Gynecologic laparotomy	146	14	9.6	..	..	...	146	14	9.6
Miscellaneous laparotomy	51	3	5.9	28	2	7.1	23	1	4.3
Total	667	87	13.0	295	53	18.0	372	34	9.1

Tables 2 and 3 give an analysis of the total operations for the period of the study with a percentage of complications for each sex and each type of operation. A study of the tables brings out the following points:

1. Taking the series as a whole, there is a very slight decrease in the percentage of the total number of complications occurring in the treated group.

2. In the so-called bad risk group (men who have had operations on the stomach, gallbladder and intestine) there is a definite increase of complications in the treated group following both gastric and intestinal operations and a very slight decrease following gallbladder

operations. In each instance, however, the number of cases is small.

3. There is an increase in the percentage of complications in the treated group of women who have had operations on the stomach, but a very marked reduction in the case of women with intestinal operations.

4. Women having had operations on the appendix have shown a very low percentage of complications in both the treated and untreated groups. The figures, however, run slightly higher in the treated group.

5. Following gynecologic operations, the treated group shows a definitely lower percentage of complications.

6. Table 4 gives an analysis of the total complications occurring in the treated and untreated groups from the standpoint of the severity of the complications. It will be noted that if all the complications, including bronchitis, are considered, the percentage of complications in the treated and untreated groups is practically the same. If, however, bronchitis is omitted and only the definite pulmonary complications are considered, there is a slightly smaller percentage in the treated group. If the moderate and severe complications are considered, there is a more marked showing in favor of the treated group. It must be remembered, however, that practically all of this improvement came in two months, namely, December, 1930, and especially February, 1931, and that comparative improvement did not continue when frequent postural change had been instituted in the untreated group.

TABLE 4.—*Postoperative Pulmonary Complications*

	Number of Operations	Postoperative Pulmonary Complications					
		Including Bronchitis		Not Including Bronchitis		Moderate and Severe Only	
		Number	Per Cent	Number	Per Cent	Number	Per Cent
Treated	648	135	20.8	80	12.3	48	7.4
Untreated	667	137	20.5	87	13.0	70	10.5

7. During the period of study, typical massive collapse has not been observed in either the treated or the untreated group, although in both groups, the x-rays have shown many cases of collapse of all or part of one lobe. I believe that the attention given to bronchial drainage is responsible for the prevention of the massive collapse cases, and, on the basis of observations and statistics to date, I consider that carbon dioxide is effective in preventing postoperative pulmonary complications only so far as it encourages coughing and raising secretion. However, frequent change in position is, in my opinion, fully as effective a method of prevention.

8. The study of the chart and the tables which show a constant and rather low percentage of complications in the treated group and a dropping percentage in the untreated group (due, in my opinion, to postural change) would lead one to believe that the percentage of complications in the total series of cases included in this study in 1931 would be below the percentage of complications which were recorded in 1930, in which series carbon dioxide inhalations and postural change were not as carefully given. It is rather disappointing, however, to find that the percentage of complications for the period of the carbon dioxide study in 1931 are only slightly below the complications as reported in our study for 1930. It is true, however, that in 1931 the complications were observed and recorded somewhat more carefully than they had been in 1930, because the special nurse in charge of the carbon dioxide treatment made the daily visit with the surgical staff and reported all cases in which there was even the least suggestion of a pulmonary complication in order that these cases might be roentgenographed and personally studied by me. It is also apparent, from a study of the curve of total complications, that the last six months of 1931 show a distinct improvement over the last six months of 1930; which improvement, in my opinion, can be maintained by frequent postural change without the use of carbon dioxide. In the Massachusetts General Hospital, therefore, the routine use of carbon dioxide as a preventive measure against postoperative pulmonary complications has been discontinued and the search for a more effective method is still being pursued.

SUMMARY

1. A study is outlined in which 648 patients who had had laparotomies or hernia repairs received carbon dioxide inhalations from three to twelve times in each twenty-four hours for the first three postoperative days.

2. The percentage of pulmonary complications of the type including "bronchopneumonia," "pneumonitis" and "collapse" is recorded for the total group, for the two sexes and for the different types of abdominal operations.

3. The results in this treated group are compared with the percentage of complications developing in 667 carefully alternated cases which were used as controls.

CONCLUSIONS

1. During the first four months a comparison of the percentage of complications in the treated and untreated groups seemed to show a marked reduction in favor of the treated group, especially a reduction in the percentage of "moderate and severe" complications as compared to the total group including the "mild" cases.

2. In the last eight months of the study, however, the percentage of complications, while more nearly equal, has been definitely less in the untreated group.

3. The percentage of complications in the treated group has been fairly constant, no matter what the method of administration of the carbon dioxide or its frequency or duration. The amazingly low percentage in February came in the period when the least treatment was being given.

4. A striking observation has been the marked reduction in the complications in the untreated group. The explanation offered for this reduction is a change in the postoperative nursing care, providing frequent change in position, favoring bronchial drainage.

5. It is believed that better bronchial drainage, either by postural change or by carbon dioxide inhalations, has practically eliminated massive collapse.

6. No method of treatment, either postural change or carbon dioxide inhalations, has materially affected the percentage of complications occurring in the so-called bad risk group, composed of males with operations on the stomach, gallbladder and intestine.

7. In 1931, the use of carbon dioxide with one group and postural change with another has resulted in only a slight reduction of the percentage of total pulmonary complications as compared with that of 1930. Were it not for the better observation and recording of complications in 1931, the figures would undoubtedly show a greater reduction.

8. Given according to the methods described in this article, carbon dioxide inhalations are of no greater value in preventing postoperative pulmonary complications than frequent change in position of the patient.

9. Progress in routine postoperative care has been made, but a real preventive for postoperative pulmonary complications has not been discovered.

205 Beacon Street.

SURGICAL STIMULATION OF BONE GROWTH BY A NEW PROCEDURE

PRELIMINARY REPORT

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Many surgeons believe they have observed cases in which a bone has recovered some of its length after a fracture with shortening. This phenomenon does occur and is in accordance with a general principle of bone physiology which has not received the attention it deserves. The principle is that during the period of epiphyseal growth interruption of the medullary blood supply to the metaphysis without interruption of the periosteal blood supply to the end of the shaft produces an increase in the speed of longitudinal growth of the metaphysis affected.

This article presents examples of the operation of this principle and a surgical method of applying the principle to secure stimulation of growth.

THE PRINCIPLE

In a study of the factors influencing bone growth it was observed that after osteotomy of the tibia in children the upper end of the fibula was short relative to the tibia except in rare instances. This suggested that interruption of the medullary blood supply of the tibia had stimulated growth. A review of various cases in which the medullary blood supply of a bone had been interrupted confirmed this opinion. However, comparatively few cases provided sufficient data for thorough study because of various factors, such as both legs being operated on, only one leg being roentgenographed, the full length of the bone not being shown, or examination not being continued after union occurred. When any deductions could be drawn there was constantly the suggestion of an increase of growth rate after interruption of the medullary blood supply in children. Because of the frequent incompleteness of the data the cases are not tabulated, but the following examples are given:

A child had an ununited fracture of the tibia with the whole leg underdeveloped at the age of 5. In the following seven years the two fragments of the tibia grew 6¼ inches, while the fibula grew only 3¾ inches, a gain of more than one-sixth inch per epiphysis annually for the tibial metaphyses whose medullary blood supply was interrupted. At the age of 8 a graft was inserted, more of it being in the upper fragment. Thereafter the upper fragment grew faster than the lower. At the age of 10 a graft was inserted, more of it being in the lower fragment. Thereafter the lower fragment grew faster than the upper.

Most processes that increase the growth rate at the epiphyseal disks result in premature union of the disks, so that the final result may actually be shortening. Hence it is worthy of note that in the case cited, at the age of 12, after seven years of abnormally rapid growth, the epiphyseal lines in the fractured tibia revealed no evidence of a tendency to premature union as compared with other epiphyseal lines in the legs, nor has a tendency to premature union of epiphyseal lines been noted after osteotomies.

Another patient had an amputation through the upper half of the tibia and fibula at the age of 12. In two and one-half years the fibula grew three-fourths inch from the one remaining epiphysis, and the tibia more than three-eighths inch, how much more being undetermined as there was considerable absorption of the end of this bone. The growth of the fibula from its one remaining epiphysis equaled its normal growth at this age from two epiphyses.

A child had an osteotomy of each tibia at the age of 6. In the following twenty-one months each tibia gained three-eighths inch on the fibula, which is 50 per cent more than the normal gain of the tibia on the fibula at this age.

A child had an osteotomy of the tibia in the upper third at the age of 7. In nineteen months the tibia gained one-fourth inch on the fibula (30 per cent more than normal at this age), and examination of transverse lines in the bone showed that the excess growth was all at the upper metaphysis, the one affected by the osteotomy.

Correlation of such examples in cases of fracture, osteotomy, prenatal fracture, bone cyst, abscess and amputation led to the conclusion that interruption of the medullary blood supply to a metaphysis results in about 30 per cent increase of longitudinal growth rate at that metaphysis. During the rapid growth period of adolescence this is the equivalent of about one-eighth inch annually for each epiphysis affected. Such an increased growth rate continues for an indefinite time, probably at least three years, and more rapidly in the first year after operation than subsequently.

THE OPERATION

An obvious suggestion from the phenomenon stated is that growth of tubular bones can be stimulated to gain about one-eighth inch for each epiphysis annually during the growing period by the simple process of drilling into the bone half way from the epiphyseal line or lines to the middle of the bone, inserting a knife or curet and disrupting the continuity of the medullary substance.

Such an operation was done at this hospital in April, 1932, in a case of poliomyelitis with the right leg 1¼ inches short at the age of 10. The medulla was sectioned in the upper and lower third of the right tibia and fibula and in the lower third of the femur.

The operation is done as follows: The bone is approached through a short incision, anteriorly for the tibia, laterally between the muscles for the fibula or femur. The periosteum is divided by a small crucial incision. A hole is made through the cortex with a three-sixteenth inch drill. The medulla is divided transversely by means of a curet. The wound is closed in the ordinary manner.

Such an operation has been done in sixteen cases in which there was a short leg, up to October, 1932. Seven bones operated on in four cases were examined from three to five months after operation. In each bone roentgenograms showed a gain in length of from one-sixteenth to one-eighth inch on the corresponding bone of the opposite leg.

Whenever medullary section is done on the tibia, it is done also on the fibula. The upper end of the femur is not used unless the shortening is great. The order of preference is (1) lower end of femur, (2) upper end of tibia and fibula, (3) lower end of tibia and fibula,

(4) upper end of femur. A sufficient number of metaphyses are treated to gain the desired length, the gain being estimated at one-eighth inch annually for each epiphysis up to the age of 14 for girls and 15 for boys. It is believed that the operation can be repeated if the increased growth rate slackens after two to four years. No case has shown any evidence of disturbance of the bone other than the change in growth rate.

These cases will be followed through adolescence to determine the actual gain in length over a period of years for the various bones at various ages, and to determine at what period after operation growth is most rapid and how soon the increased growth rate slackens.

420 East Fifty-Ninth Street.

CIRCULATION OF THE HEAD AND NECK OF THE FEMUR

ITS RELATION TO NONUNION IN FRACTURES OF THE FEMORAL NECK

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The study here reported was made of seventy-nine cases of fracture of the hip. An analysis of the age, type of fracture, roentgen observations, character of treatment and end-result has been made. All of the intracapsular fractures were treated by the Whitman abduction treatment.

Nonunion resulted in four cases in which Whitman's reconstruction was performed. These cases afforded an opportunity for both gross and microscopic studies of the removed ligamentum teres and femoral heads, as well as examination of the area of nonunion in each instance. Considerable material has also been obtained at the autopsy table and from the dissecting room for further study in regard to the source of the blood supply to the head and neck of the femur. Observations were also made in reference to the part the ligamentum teres had to play in carrying nourishment to the femoral head. It was hoped that information gained from such anatomic and histologic observations, coupled with clinical experience in a fairly large series of fractures of the hip, would develop some points of definite clinical value.

ROENTGEN OBSERVATIONS

Since the appearance of Santos' [1] publication in September, 1930, a careful study has been made of all x-ray films taken in this series of cases. A correlation of the observations of my co-workers and me with those reported by Santos has been both interesting and of definite clinical value. In no instance was there roentgen evidence of necrosis of the head or neck of the femur in the thirty-eight intertrochanteric fractures. Throughout the entire roentgen examinations in these cases, the relative density of the fragments of the head and neck seemed to remain constant with that of the shaft. Of the intracapsular group, however, in eleven cases in which nonunion existed, definite changes in the relative density of the free head and the upper shaft were seen. In six of these the femoral head cast a shadow of definitely increased density when compared with the shaft (fig. 1). In five cases, on the other hand, as time progressed more and more mottling developed, distributed irregularly throughout the proximal fragment (fig. 2). I doubt if in these last mentioned cases the changes were those of transformed necrotic heads, for at no time in any instance could there be found a roentgenogram which showed a period of increased density preceding the mottling. I regarded these heads as being of the atrophied but living type as described by Santos. It is obvious that microscopic examination would be necessary to settle this question definitely.

In two cases (fig. 1 *A* and *C*) a well pronounced wedge shaped area of localized resorptive rarefaction extended inward with the base of the wedge at the fovea. Excepting for this area, the density of the remaining portion of the proximal fragment was increased. These femoral heads are now in the process of being prepared for microscopic study and will probably be found to contain localized necrotic spongiosa showing simultaneous absorption and formation of new bone, as in case 2 described in Santos' series. On cross-section of the gross specimens, these areas were dark, soft and friable. They were also apparently invaded by ingrowths of fibrous tissue from the region of the attachment of the ligamentum teres. The remainder of the spongiosa of the head appeared to be normal in color and structure.

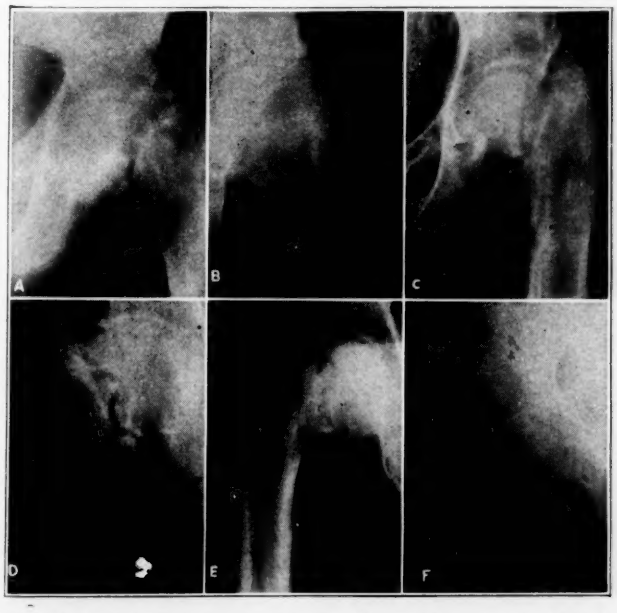


Fig. 1.—Roentgenograms showing nonunion in six cases in which the femoral heads cast a shadow of increased density when compared with the shaft. In each instance the fracture took place through the subcapital region, or very near it, and was followed by almost complete resorption of the femoral neck. *A* is referred to in detail under the description of case *3*; *B* is likewise described in detail in case *2* and *C* in case 1. In all of these cases, although increased density prevails throughout a major portion of the femoral head, still in certain regions small areas of decreased density can be seen.

ABSORPTION OF THE FEMORAL NECK

In the fifteen cases in which nonunion resulted, early beginning absorption of the femoral neck was noted. Subsequent roentgenograms taken at regular intervals in each instance showed that once resorption in the area of the neck began, it progressed until the entire neck had disappeared. Later the fractured surfaces became capped by sclerotic bone, which shows in the roentgenograms as lines of definitely increased density.

Read before the Section on Orthopedic Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Santos, J. V.: Changes in Head of Femur After Complete Intracapsular Fracture of the Neck: Their Bearing on Non-Union and Treatment, Arch. Surg. **21**: 470 (Sept.) 1930.

ANALYSIS OF FOUR CASES; WHITMAN'S RECONSTRUCTION

CASE 1.—A man, aged 60, was first seen eighteen months after he had fallen from a sign board scaffold, sustaining a subcapital fracture of the neck of the femur. A small sharp prong of bone was detached from the upper surface of the femoral neck and remained attached to the proximal fragment. Six days after the injury, a Whitman reduction was done, and an abduction cast was applied. This cast was removed on the fortieth day, at which time a second roentgenogram was taken (fig. 3 *A*). The roentgenologist reported "bony union of the upper two thirds of the fracture and still a line of fracture seen in the lower one third." The patient went home without further support and remained in bed for two weeks, after which he began to get about on crutches. The roentgenogram taken on the fortieth day showed incomplete reduction. This, plus the inadequate period of fixation, probably eliminated any chance the patient had of securing bony union. A roentgenogram taken eighteen months after the accident (fig. 3 *B*) showed nonunion with complete absorption of the femoral neck and an area of resorption, extending from the fovea down into the femoral head. The remaining portion of the proximal fragment retained its normal density. On opening this joint capsule along its anterior surface, fibrous tissue was found to fill the area of the fracture and cover the end of both the proximal and distal fragments. The fractured surface of the proximal fragment was well supplied with blood vessels about the circumference of the neck, and as it was freed from this fibrous tissue, these vessels bled freely. The ligamentum teres was cut across about three-fourths inch from its distal attachment before the head was enucleated. The acetabular cartilage was normal, and when the ligamentum teres stump was trimmed back a definite spurting from one or more divided arteries was noted. There was considerable erosion of cartilage about the fovea (fig. 3 *C*) and about the circumference of the femoral head where it joins the neck. The weight-bearing surface of the cartilage appeared normal. In shaping the proximal end of the neck some bone was cut away, and this bled normally. On sagittal section of the specimen of the femoral head, the spongiosa appeared more yellow than pink throughout, except for a wedge-shaped area underlying the fovea, which was dark and friable (fig. 3 *D*). This area was apparently being invaded by an ingrowth of fibrous tissue from the region of the insertion of the ligamentum teres. The cartilage overlying this area was partially absorbed, pitted and easily detached. The roentgenogram of the removed femoral head is interesting for it seems to show that there are definite areas of resorption wherever blood vessels were found to enter the head, both at the fovea and about the circumference of the base, being pronounced in that portion of the neck where the spicule of the fragment of the upper part remained attached to the head (fig. 3 *E*). There were many small blood vessels which were seen to enter the femoral head in this region at the time of the operation. Undoubtedly, the attached fragment of the neck preserved some of the periosteal blood vessel supply to the neck. Microscopic study of the ligamentum teres showed many small blood vessels and one fairly large artery coursing through that structure. The most vascular area is shown in the photomicrograph (fig. 3 *F*).

In summary, the following points were noted:

1. Nonunion, probably due to incomplete reduction and inadequate period of fixation.
2. Increased density of the head, except for a portion about the base of the fovea and about the circumference in the subcapital region where invasion by fibrous tissue carried in new blood vessels.
3. Partially necrotic femoral head.
4. Ligamentum teres normal in size and appearance and proved to be vascular by microscopic examination.
5. Area of bone and cartilage absorption about the fovea and about the circumference of the neck where definite replacement by new bone was going on.

CASE 2.—A man, aged 72, as a result of a fall, sustained a fracture through the neck of the femur. He received treatment for sciatic rheumatism, and when seen three months later there was nonunion. A roentgenogram showed a normal-sized head and little absorption of the neck at that time (fig. 4 *A*). There was increased density throughout the entire head and marked atrophy of the shaft of the femur and innominate bone. Whitman's reconstruction was done, the joint capsule being opened through an anterior approach. Highly vascular tissue was found to separate and seal over the ends of the fragment.

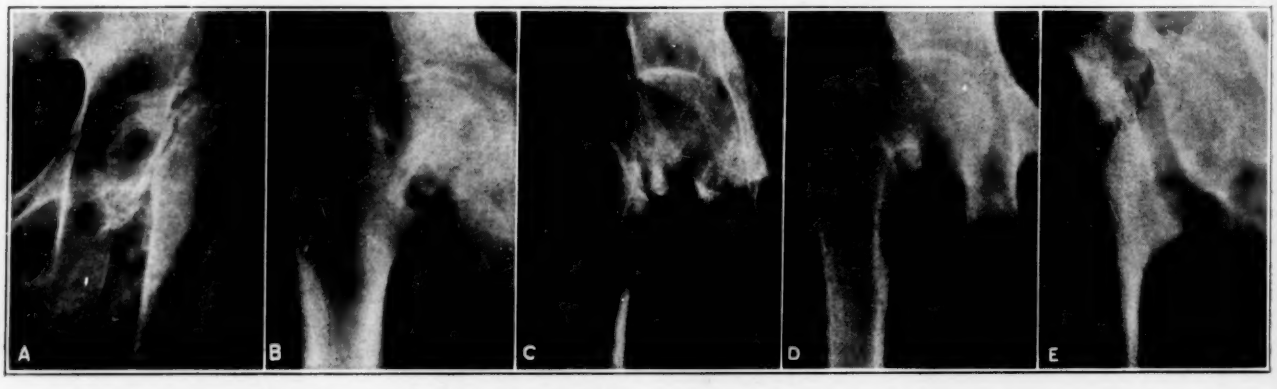


Fig. 2.—Roentgenograms from five cases of fracture showing definite mottling and decreased density throughout the fragment of the femoral head. These should be interpreted as vital heads according to Santos (case 6, Santos series). *C* is described in detail in case 6.

On freeing the circumference of the neck from this fibrous tissue, preliminary to removal of the head, many small bleeders were divided. The ligamentum teres was perhaps slightly smaller than usual, but appeared to be normal. The cartilage of the femoral head and acetabulum was normal, except for some irregularity and thinning about the fovea (fig. 4 *B*). Sagittal section of the femoral head showed it to be firm throughout, excepting for a small dark area underlying the fovea and a definite invasion of fibrous tissue and sclerosis covering the fractured surface of both fragments (fig. 4 *C*). The major portion of the spongiosa was more yellow than red. The cartilage covering of the head of the femur was normal in color and thickness and was adherent to bone, with the exception of that area about the fovea where it was either completely or partially absorbed. Microscopic study of cross-sections of the ligamentum teres showed one large artery accompanied by two veins apparently within a definite vascular sheath. Several small blood vessels were seen scattered throughout the ligamentous structure (fig. 4 *D* and *E*).

In summary, the following points were noted:

1. Nonunion due to no treatment.
2. Increased density of a major portion of the femoral head and typical atrophy of the shaft.
3. Partially necrotic femoral head.
4. Ligamentum teres normal in size, transmitting to the femoral head a definite blood supply.
5. Area of cartilage and underlying bone absorption about the fovea.

CASE 3.—A woman, aged 76, sustained a subcapital fracture as a result of a fall in her home. A Whitman reduction was done later the same day (fig. 5 *A*). Subsequent roentgenograms showed that good reduction was maintained by abduction casts for a period of five months. Beginning absorption of the neck was noted in about three months, and by the end of five months the neck had entirely disappeared and definite nonunion existed. A roentgenogram showed persistent density throughout the femoral head with moderate atrophy of the femoral shaft and innominate bone due to disuse (fig. 5 *B*). A Whitman reconstruction was done six months after the accident. An anterior incision through the capsule disclosed dense fibrous tissue filling the entire area of the fracture. The fibrous tissue which occupied the space between the two fragments definitely sealed over both ends. In this tissue small blood vessels could be seen coursing into the subcapital region, which bled freely when cut. The ligamentum teres was normal in size and appearance, and blood spurted from the cut end when it was divided near the acetabular attachment. There was some irregularity of the cartilage of the acetabulum and the femoral head. All around the subcapital circumference there seemed to exist an active cartilage absorption, and in this region many tabs of fibrous tissue were seen to be encroaching on the surface of the cartilage in a pannus-like formation (fig. 5 *C*). Scattered over the remainder of the cartilage of the femoral head, small, circumscribed and punched-out areas of complete loss of cartilage were noted. These appeared to be areas of infarction. At the base of the fovea, large areas of cartilage absorption and shaling were seen. Examination of the split femoral head disclosed a dark area of spongiosa underlying the fovea and one or two smaller areas at the subcapital region where invasion of the spongiosa by fibrous tissue was especially pronounced. The remaining portion of the spongiosa was apparently normal in structure and light yellowish pink. Microscopic studies of cross-sections of the ligamentum teres showed three definite vascular areas, in the center of one of which a large artery was seen. There could be no question about the marked vascularity of this structure (fig. 5 *D* and *E*).

In summary, the following points were noted:

1. Nonunion in the presence of prompt and apparently complete reduction and adequate fixation.

2. Increased density of the head of the femur persisting. This was associated with moderate atrophy of disuse in the femoral shaft and pelvic bones.

3. Partially necrotic femoral head.

4. Ligamentum teres normal in size and apparently carrying a good blood supply to the head of the femur. Fibrous tissue invasion marked about the subcapital area of the proximal fragment with but little if any clinical evidence of new bone formation in this region.

5. Widely distributed cartilage changes of the femoral head.

CASE 4.—A man, aged 63, sustained a fracture through the neck of the femur three years prior to our examination. He gave a history of a period of traction followed by several weeks' fixation in a cast. The roentgenogram taken on the day of our examination showed old nonunion with almost complete absorption of the femoral neck. There was definite decreased density in both the proximal and distal fragments and well pronounced areas of mottling distributed throughout the fragments of the femoral head (fig. 6 *A*). Whitman's reconstruction was done. The joint capsule was opened through the usual anterior incision. Dense fibrous tissue invaded the entire area of the fracture penetrating between and closing over the ends of the fracture. Bleeding occurred as the proximal fragment was freed of fibrous tissue about its subcapital base. On attempting to remove this head, it was found to be soft and friable. It was partially collapsed when being enucleated from the acetabular cavity (fig. 6 *B*). The ligamentum teres in this case was unusually large and bled freely when cut through its acetabular attachment. The femoral head was covered with

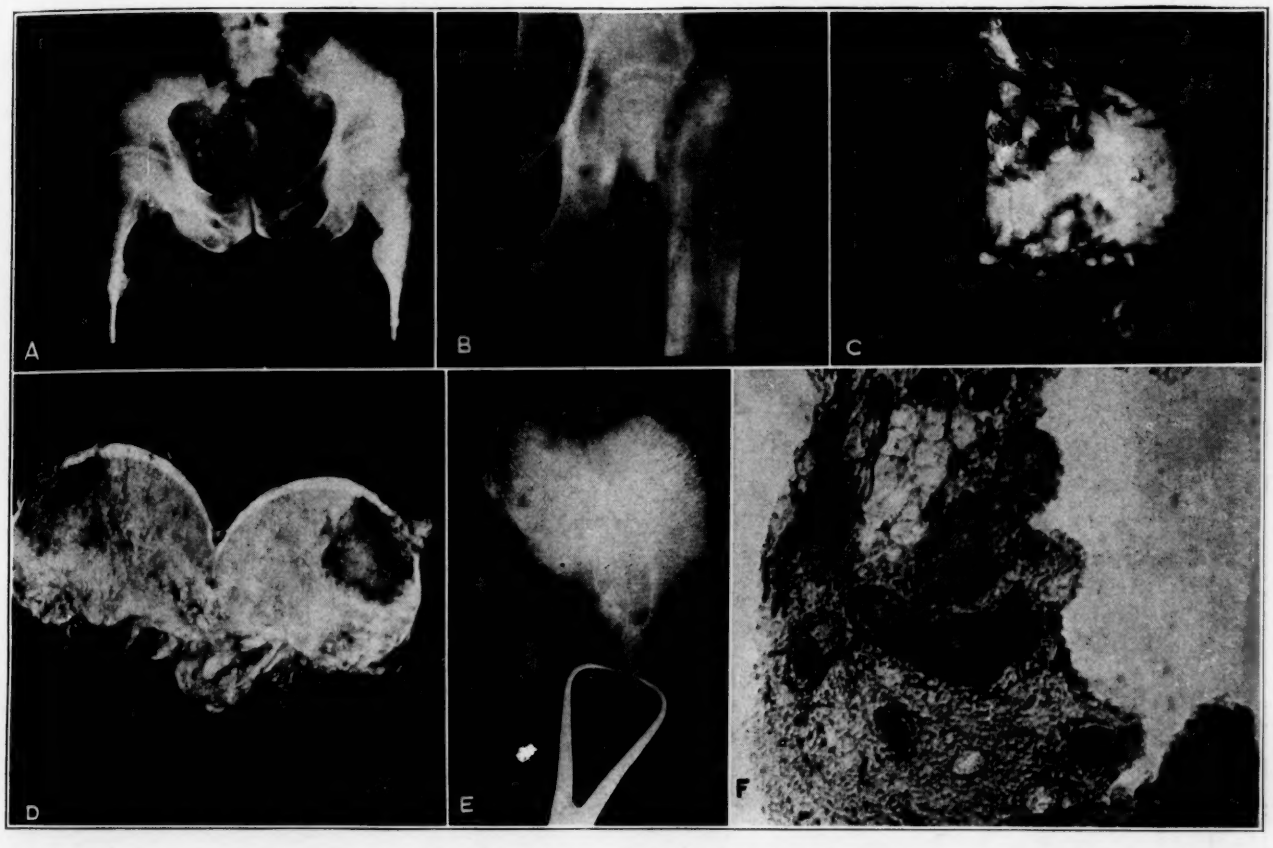


Fig. 3 (case 1).—*A*, roentgenogram showing incomplete reduction and incomplete union forty days after reduction in a man, aged 60. *B*, roentgenogram showing absorption of the neck and partially necrotic femoral head after eighteen months. *C*, photograph showing extensive cartilage absorption at the base of the attached ligamentum teres. *D*, the split femoral head. *E*, roentgenogram of the removed head. *F*, low power photomicrograph of a cross-section of the ligamentum teres showing a high degree of vascularity after eighteen months.

irregular mottled and thinned out cartilage, which was easily detached from the underlying spongiosa. There were large areas of cartilage absorption about the fovea and about the subcapital junction. In all of these areas marked invasion of fibrous tissue into the spongiosa was noted. On sagittal section of the femoral head, the fovea region collapsed under the pressure of the chisel. The underlying spongiosa was dark and had the appearance of a lump of sugar before it collapses after being water soaked (fig. 6 *C*). Throughout the central portion of the head, the spongiosa was yellowish pink, firm and apparently of normal structure. Toward the distal base of the proximal fragment, however, dense fibrous tissue penetrated the spongiosa for a depth of about 1 cm. This area was white, tough and hard to cut. About this periphery, there was evidence of definite lipping, a result of new bone proliferation. The microscopic examination of the sectioned ligamentum teres showed several small blood vessels distributed throughout its structure (fig. 6 *D* and *E*). Some of these seem to be partially occluded. Microscopic study of the spongiosa showed active bone cells distributed throughout the femoral head. A section through the denuded cartilage area showed new cartilage being formed by invasion of fibrous tissue (fig. 6 *F*). Where such replacement was taking place, minute blood vessels could be seen to follow the fibrous tissue into the substance of the spongiosa, which was unusually vascular in such areas.

In summary, the following points were noted:

1. Three year old subcapital fracture of the femoral neck with nonunion.
2. Roentgenogram showing marked atrophy of both proximal and distal fragments, with definite atrophic mottling.
3. Living, but soft friable head following three years of disuse.
4. Ligamentum teres present and apparently conveying a considerable supply of blood to the femoral head.
5. Much bone and cartilage resorption and replacement going on.
6. Invasion by fibrous tissue and replacement vascularization appears to be taking place in certain portions of the femoral head.

In none of these cases were tears of, or interposition of, capsule between the fragments found. This fact is mentioned because two of the patients had fallen from a considerable height, and also because Greifenstein states that he believes that a capsular fold is interposed in 75 per cent of intracapsular fractures, and he gives this as one of the main factors in the delayed healing.

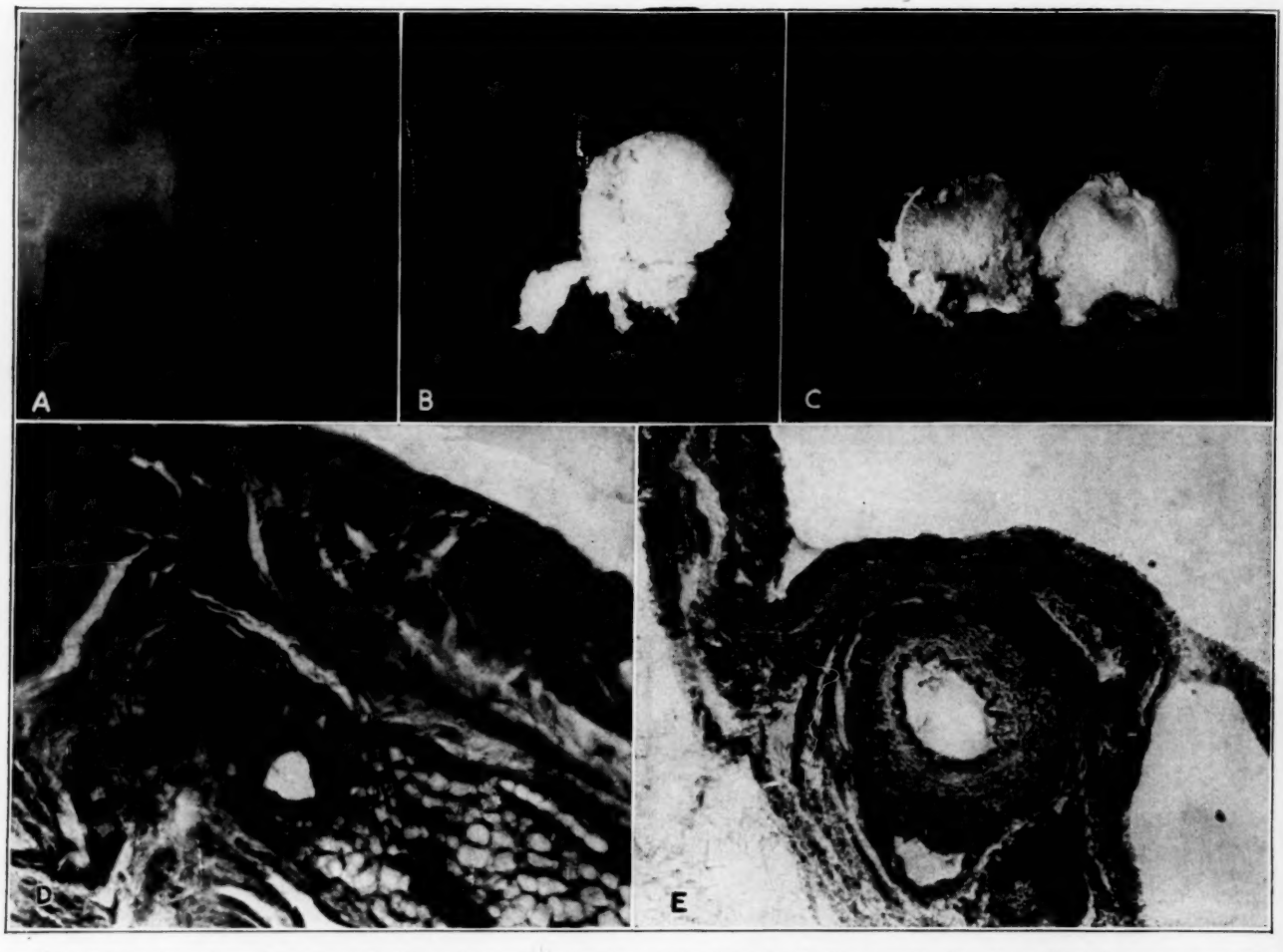


Fig. 4 (case 2).—*A*, roentgenogram showing an intracapsular fracture of the femoral neck three months after the accident, in a man, aged 72. *B*, the removed femoral head; cartilage absorption is seen about the fovea. *C*, the split femoral head showing rarefaction of the head; base of triangle at the fovea. *D*, low power photomicrograph of a cross-section of the ligamentum teres. *E*, high power magnification of the large vessels in *D*.

Summary.—It was both interesting and instructive to check the operative observations with the roentgen interpretation made prior to operation. In three of these cases the roentgenogram showed typical increase in density in a portion of the femoral fragment when compared with the femur distal to the fracture as described by Santos. On examination of the gross specimens, however, it was found that the femoral head was receiving definite nourishment through the ligamentum teres and apparently also a lesser, but positive, blood supply from many small vessels which followed invasion by fibrous tissue of the spongiosa about the subcapital region. These two sources of blood supply were able to maintain sufficient nourishment to prevent

complete necrosis of the femoral head over a period of several months in each instance. Whether there was sufficient anastomosis of these two circulations to prevent the development of scattered small or relatively large areas of necrosis within the head is not known to us, for to date we have not studied serial sections of these specimens. We did observe, however, that where there was invasion of the spongiosa by fibrous tissue, whether at the fovea or subcapital region, new blood vessels usually accompanied such tissue into the substance of the bone, accounting in this way for the areas of resorption and simultaneous attempts at bone repair.

CIRCULATION OF THE HEAD AND NECK OF THE FEMUR

A review of the literature concerning the blood supply to the head and neck of the femur in its relation to the nonunion of fractures through the femoral neck disclosed the fact that there is a definite disagreement concerning many of the vital factors entering into this subject. Some writers who should be able to speak with authority contend that the ligamentum teres, as a factor in carrying blood to nourish the femoral head, is of little consequence, especially after 50 years of age, stating that this structure atrophies even to the point

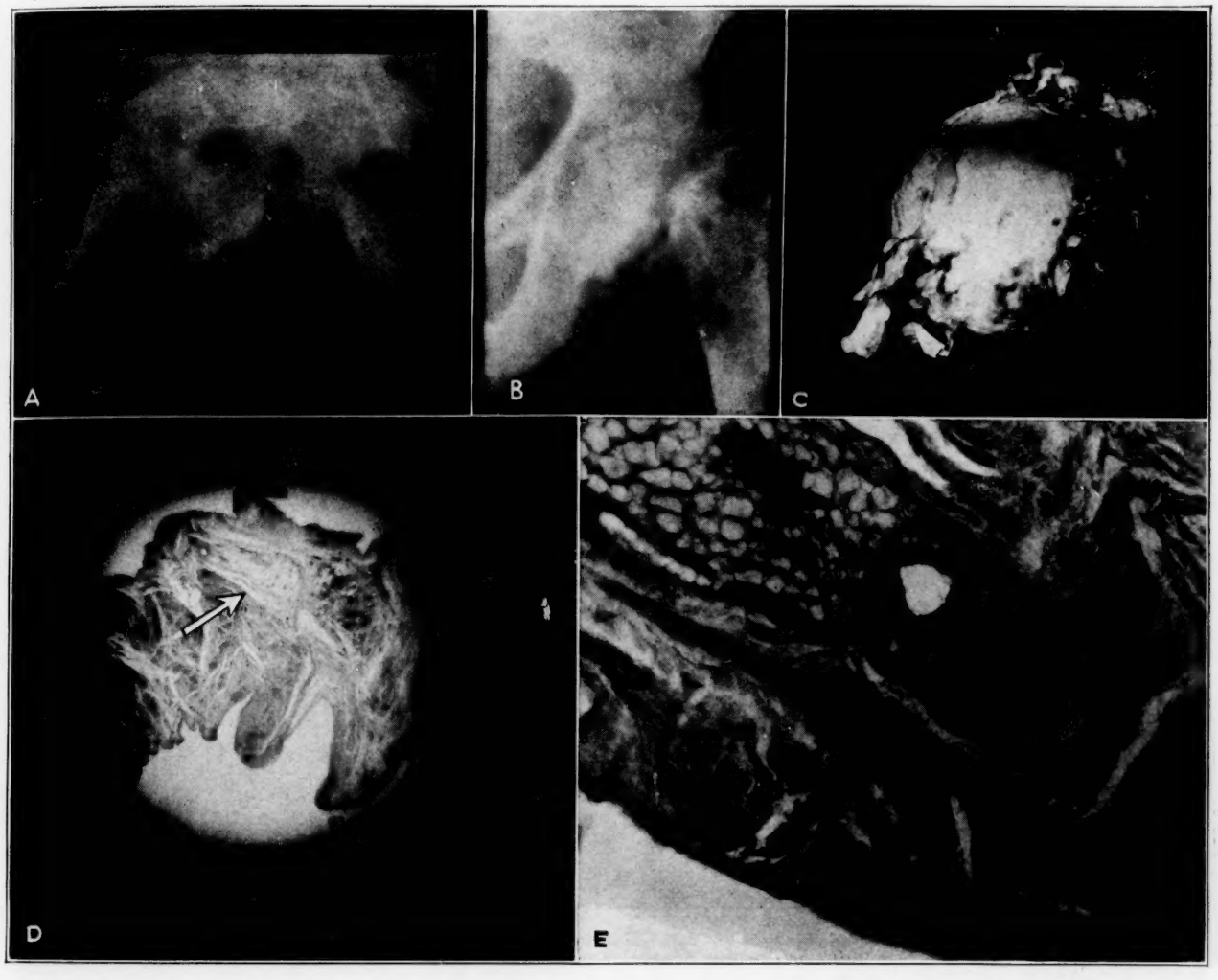


Fig. 5 (case 3).—*A*, roentgenogram showing satisfactory reduction the day of the accident, in a woman, aged 76. *B*, roentgenogram of the hip five months after reduction showing the head of increased density, triangle of resorption, base at the fovea and absorption of the neck. *C*, removed femoral head showing extensive cartilage destruction. *D*, low power photomicrograph of a cross-section of the ligamentum teres; the arrow points to the vascular areas. *E*, high power magnification of the vascular area.

On the other hand, in none of the forty-one cases of intracapsular fracture have we observed evidence of a femoral head possessing definite increased density which was revascularized and reconstructed by ingrowths from the distal fragment. In fact, in all cases in this series in which we interpreted such increased density, the end-result has been nonunion. This statement of facts should by no means be interpreted as an intimation that reconstruction of the proximal fragment from the distal side does not occur. However, in every case in which operation was done by us the ligamentum teres carried a sufficient number of blood vessels to keep alive that portion of the femoral head to which it was distributed. of entirely disappearing in some cases with the advancing years. Others, who should be equally well informed, take the adverse stand, claiming that it is a vital factor in nourishing the head even in advanced age. Still others apparently believe that the most vital factors in the production of union are dependent on conditions which exist at the site of fracture such as the amount of comminution or fragmentation of the neck, lack of sufficient hemorrhage which by some is regarded as essential in the production of the proper p_H balance, favorable to union, while still others contend that local tissue necrosis is a preliminary requisite in liberating certain essential ferments, the presence of which are

necessary before bone repair can take place. Some regard the presence of synovial fluid as a serious handicap, and, as mentioned before, tears in the capsule and interposition of capsule folds between the fragments are still further factors which may be contributing to retard or prevent union. Kolodny, as a result of his extensive investigations of this subject, apparently believes that union depends much more on the preservation of the periosteal vessels than on any circulation which may nourish the proximal fragment by way of the ligamentum teres. Because of the wide divergence of opinion in regard to which of the circulations is most important in the repair of intracapsular fractures, it would naturally lead to the conclusion that entirely too little is known concerning the actual areas within the head and neck of the femur, which are supplied by each of the four circulations described by Kolodny.[2] Our study has met many technical obstacles. Several injections of opaque material have been made in the arteries of autopsy subjects, and although many excellent stereoscopic films have been made, in none of them have we been able to trace the smaller blood vessels into the ligamentum teres or into the capsular and periosteal vessels. However, further attempts are anticipated with the hope that by some method of injection followed by roentgen examination we may be able definitely to demonstrate anastomosis between the blood vessels of the ligamentum teres and the three other circulations supplying the upper end of the shaft and neck of the femur.

In several dissections made recently, we experienced no difficulty in tracing either one of two fair-sized arteries, which are terminal branches of the obturator and the internal circumflex, until they disappear under the transverse ligament and enter into the ligamentum teres. At times these terminal branches anastomose before they pass under the transverse ligament previously mentioned. The inferior gluteal artery was found to send off terminal articular branches which could be traced until they entered the capsule along the superior and anterior surface of the femoral neck. We found the nutrient artery of the femur to be irregular in its origin, but it is usually given off from the second perforating artery, a branch of the profunda. Serial cross-sections of the ligamentum teres, femoral head and neck of a full term infant have been made. A definite vascular zone was seen to pass through the ligamentun teres, and as the head sections began to appear a few minute vessels were seen. Further down in the head portion, toward the neck, there was a definite increase in the size and number of the vessels. The amount of the material studied, however, does not warrant us making any positive statement in reference to the finding of evidence of an anastomosis between the vessels of the femoral neck and those passing in through the ligamentum teres. Many ligamentum teres which have been secured at autopsies and from the dissecting room have been examined. We have found

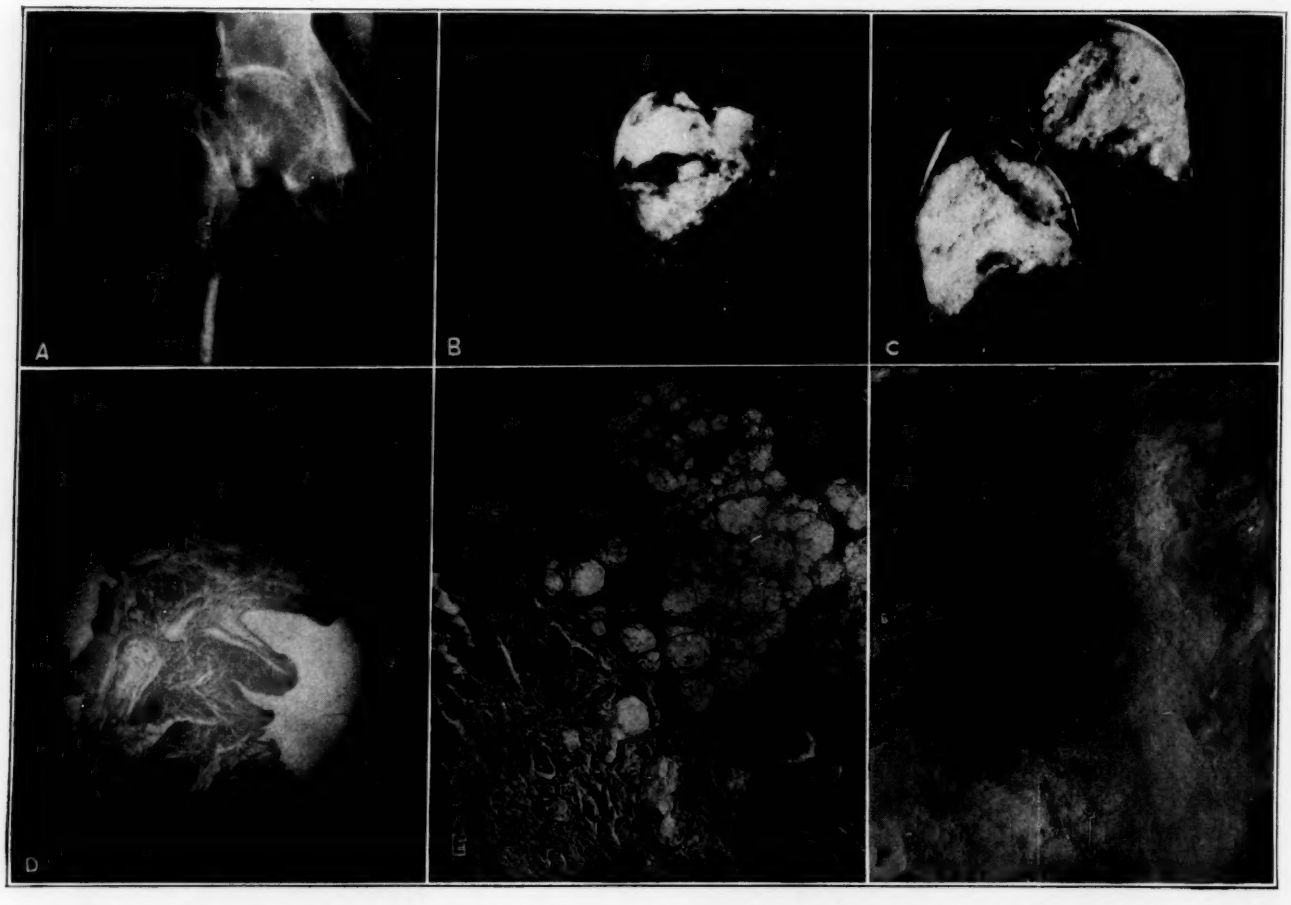


Fig. 6 (case 4).—*A*, roentgenogram of the fractured hip three years after the injury, in a man, aged 65. Marked decalcification is present. *B*, removed, friable femoral head showing marked cartilage changes. *C*, split femoral head showing collapsed, friable, but living head. *D*, low power photomicrograph of a cross-section of the ligamentum teres showing location of the vascular area within its substance. *E*, high power magnification of the vascular area. *F*, photomicrograph showing invasion by fibrous tissue and new bone formation going on.

2. Kolodny, Anatole: Blood Supply of Head of Femur, J. Bone & Joint Surg. **23**: (July) 1925.

that all of those ligaments examined contain blood vessels which vary considerably in size and in their grouping within the ligament substance. Even in those cases in which the patients were over 80 years of age and had a definite generalized arteriosclerosis, the ligamentum teres vessels were on the average creditable in size and number with those from subjects who were much younger. Apparently then, in our experience, the age of the patient, after adult life at least, did not influence in any way the circulation being carried by the ligamentum teres to the head of the femur.

Kreuscher and S. B. Chandler of Chicago have made a similar observation as a result of their studies of the ligamentum teres in 114 human subjects. The results of their investigation were reported before the American Anatomical Society in April, 1932. It should be mentioned that in the analysis of treatment of the aforementioned cases of intracapsular fracture, very efficient Whitman reduction and fixation casts were applied in thirty-five of the forty-one cases. In two there seemed to be definitely incomplete reduction, and in two other instances there were periods of preliminary traction followed by the application of casts after incomplete reduction. In one instance the fracture had been treated by sand bags, and in the remaining case, because the presence of a fracture had been overlooked, inadequate treatment had been given.

GENERAL CONCLUSIONS

1. We have proved to our own satisfaction that the ligamentum teres carries a definite blood supply to the head of the femur regardless of the age of the subject.

2. The blood supply is a definite factor in maintaining the nourishment of the head of the femur in cases of intracapsular fractures.

3. We believe from this study and clinical experience that operations for repair of nonunion in the neck of the femur should be planned and executed in a manner which will not disturb or injure the vessels coming through the ligamentum teres, nor should foreign material approximate too closely the foveal area.

4. Although, in none of the four cases in which the removed femoral heads were studied was there complete necrosis, in three of them the roentgenograms showed definitely increased density in the fragment of the head. Santos' observations, notwithstanding, are of definite clinical value in our estimation.

5. Many factors probably enter into the production of nonunion in intracapsular fractures of the femoral neck.

ABSTRACT OF DISCUSSION

DR. MYRON O. HENRY, Minneapolis: Dr. Wolcott's figures reiterate the challenge furnished by the Hip Commission of the American Orthopedic Association in 1929; namely, that the Whitman method as it has been used is not gaining union in a high enough percentage of cases. Dr. Wolcott's figures of only 36 per cent of nonunions is well above the average, but that doesn't obtain in any other fracture, and it is a distinct challenge to our profession as yet unanswered. I want to emphasize what Dr. Wolcott said about the decreased calcification in the head. It must be remembered that there cannot be decalcification of the head without circulation, so that a decalcified head is certainly a live head. I was able by animal experimentation to make heads, devoid of any soft part attachment, grow. This means that they grew by creeping substitutions such as Phemister described. I think that this is the most important part of the circulation, although I agree with Dr. Wolcott that nothing should be done to impair the circulation that does come through the ligamentum teres.

DR. FREDERICK GAENSLEN, Milwaukee: Dr. Wolcott differentiated sharply between the cases in which he had a living femoral head and those in which he had a dead head, because that is a point of vital importance. I have seen the series of specimens that Dr. Phemister has in his collection, in which he shows necrotic heads and heads that show revascularization in all stages, but it seems that it is expecting a good deal for an entire head to become revascularized by the relatively small vessels in the ligamentum teres. One has to depend to a considerable extent on the reformation of vessels across the line of the break. I will report briefly some work done by Dr. M. G. Millar and myself at the University of Wisconsin on material furnished by the anatomic laboratory. Because of the favorable results in four cases of impacted fractures of the neck with slight valgus, I felt that the earlier union, allowing earlier weight bearing, was due at least in part to the valgus. Accordingly an attempt was made to develop a method that would assure valgus in the process of reduction. We produced fractures of the neck of the femur in cadaver specimens by applying a gradually increasing force in a vertical direction. The fractures were all in the vertical line and required forces from 1,600 to 3,200 pounds. The reduction maneuver consisted in flexion of the hip and of the knee to 90 degrees and powerful upward traction in the long axis of the femur. A manual thrust in the region of the trochanter secured a slight valgus position. Finally extension and moderate abduction with slight internal rotation completed the maneuver. The flexion is important in relaxing the hamstring muscles and allowing the correction of the overriding of the fragments. Not infrequently it was found that the torn posterior capsule, hanging from the posterior margin of the acetabulum like an apron, had become lodged between the fragments. The flexion of the hip and the upward traction invariably pulled this apron of capsule out from between the fragments. I am in accord with Dr. Wolcott when he says that interposition of the capsule is one of the important points in the causation of nonunion. The opportunity for revascularization of the proximal fragment across the line of the break is certainly better with the interposed capsule removed, so that dependence does not have to be placed entirely on the nutriment brought through the ligamentum teres. If union is to be expected in a graft, the blood supply must be obtained not from the ligamentum teres but from the endosteum and from the cancellous bone revivifying the graft. In the same way, the necrosis that may have occurred as a result of trauma will be taken care of by the blood supply creeping through from the cancellous bone.

DR. CHESTER C. SCHNEIDER, Milwaukee: The Whitman method of treatment apparently does not give the high percentage of unions that was originally hoped for it. This leads to a consideration of the more radical treatment of fracture of the neck of the femur in the acute stage consisting of some biologic connection between the intertrochanteric region and the head. This biologic or physiologic connection has been provided by the dowel graft of Albee, and more recently by the unique and original trochanteric graft of Ellis Jones. The reluctance of the surgical profession to adopt the living graft has apparently been due to the difficulty of the technic of a proper placement of this graft. In attempting to improve Albee's technic, I have devised a method of roentgen control for the placement of the graft at the time of the operation. After exposure of the lateral aspect of the great trochanter, a hand drill is driven into the trochanter in the direction of the head for a distance of about 2 inches and a roentgenogram of the hip is taken on the operating table, revealing the exact position of the hand drill. If this roentgenogram indicates that the hand drill has been properly placed, one can then with confidence introduce the electric fraisse burr and prepare a tunnel through the trochanter up the neck into the head for the proper distance. If the hand drill has not been properly placed, correction of its position can easily be accomplished and the tunnel properly made. Then, by merely sliding in a previously prepared dowel graft taken from the tibia, the operator can be confident of having accurately placed the living dowel graft through the trochanteric region and head. Such a dowel graft, properly placed, produces union in a large percentage of cases. Even after union, one discovers that there are other factors that contribute to the disability at the hip. One of these is the traumatic arthritis of the hip,

which is the result of degeneration of the articular cartilage arising from faulty nutrition to the head. The dowel graft used in the treatment of acute fractures improves the nutrition to the head and reduces this degenerative arthritis, not only aiding union but increasing the usefulness of the hip as well.

DR. P. A. MCILHENNY, New Orleans: I believe that orthopedic surgeons are coming to an autogenous graft in such cases. I know of many instances in which these cases cannot be treated by operation. Many of them happen in small towns, where the facilities are poor, the men are not equipped for this technical procedure, and they are forced to use means other than open reduction or operation. Proper manipulation and the Whitman method in such cases is the most flexible method and can be applied with a kitchen table, the easily devised extension apparatus and some ordinary wall plaster with some salt and mosquito netting. I believe that institutional treatment can be satisfactorily handled by the Russell method of extension, but it has one fault in that it requires observation daily, or twice daily, to make sure that the apparatus is functioning properly. Lastly, there is the method devised by Dr. Martin of New Orleans, in which two long carpenter's screws are employed, which may be applied with a local anesthetic and which require no after-treatment or support of the part. Dr. Martin has illustrated in lectures with roentgenograms and diagrams that it is perfectly feasible to draw the head of the femur down to the trochanter rather than to attempt nailing the trochanter up to the head. A drill is placed and, if found by roentgen examination to be in the desired direction and position, a carpenter's screw, from 2½ to 3 inches long, is inserted through a lateral incision over the trochanter, extending downward from 3½ to 4 inches, and the second screw is placed from an inch to an inch and a half below the first in order to fix the head in proper rotation. This is especially applicable in the aged. He has patients from 60 up to 80 years of age in whom this method has been tried. They were out of bed and at home by the time the wound was healed and lived comfortably for several years and died of other causes.

DR. ROBERT CAROTHERS, Cincinnati: The stress on the capsule is important. For a good many years I was careful to make the reduction by a method similar to a reduction of a dislocation of the head of the bone on the wing of the ilium and then getting the bone in position. My results then were much better than they have been in the last few years, so I have gone back to it. I have noticed that, if the patient is thin, one gets much better results than one does if the patient is fat. The explanation for that I can't give. I have tried a number of endocrine theories in the treatment of fat women and I have had no better results than if I didn't do it, so I think the reduction has something to do with the success.

DR. W. EUGENE WOLCOTT, Des Moines, Iowa: There is no question that the Whitman abduction method is the best type of nonoperative treatment. To my mind there is justification, for the present at least, in giving patients the advantage of such conservative treatment, major surgery being reserved for those who fail to get union. More often than not the general condition of these elderly patients does not permit of major surgery immediately after their accident, but after three months of bed rest many of them become reasonable surgical risks. May I emphasize that it does not seem to me to be good surgery to turn the head of a femur out of its socket for the purpose of direct reduction and fixation. It would also appear that because the ligamentum teres apparently carries a very considerable blood supply to the head fragment, surgical procedures should be planned in such a way that foreign bodies do not encroach on the fovea area, thereby endangering the ligamentum teres circulation.

Genius and Understanding.—Koch went to Berlin to show his work to Virchow but, finding Virchow cool and reserved, left him with bitterness in his heart. These two great geniuses never understood each other and as Virchow dominated German medicine Koch studiously avoided him hereafter. This was why, in 1882, Koch read his masterly paper on the discovery of the tubercle bacillus before the Berlin Physiological Society and not before a medical society.—Webb, G. B.: Robert Koch, *Ann. M. Hist.* **4**:509 (Nov.) 1932.

THE MANAGEMENT OF ACUTE THROMBOPHLEBITIC EDEMA

GÉZA DE TAKÁTS, M.D.
CHICAGO

The management of thrombophlebitic edema due to thrombosis of the deep veins usually consists of immobilization of the patient for from four to six weeks with some elevation of the affected limb. Then the patient is allowed to get up with or without elastic support and exhibits in most cases first a cyanotic, later a hard, brawny, swelling of the limb, which is permanent. Collateral veins do or do not appear on the extremity, according to the extent of thrombosis into the tributaries of the femoral vein. These chronic edemas are, aside from the cosmetic aspect, a potential source of further trouble. Superimposed ringworm infections, thrombophlebitic ulcers, and flareups of lymphangitis or of the old thrombophlebitis may lead

Fig. 1 (F. S., aged 45).—Bilateral thrombophlebitic edema with ulceration. Following an appendectomy twenty-five years ago, a bilateral edema developed, resulting in a condition that is not infrequent in neglected cases.

to a state of elephantiasis (fig. 1). In extreme cases nothing short of an amputation helps. In the milder cases, the edema does not progress, but there remains a permanent, nonpitting edema of the limb which no longer recedes during night rest. The limb is heavy, easily injured and offers poor resistance to infection.

The object of treatment in cases of deep venous thrombosis must be twofold: first to prevent, if possible, a loosening of the thrombus followed by pulmonary embolism; second, to bring about a rapid disappearance of the edema, before it can produce irreversible changes in the tissues. The present report is concerned only with the latter problem. The edema that follows extensive venous obstruction is hemorrhagic and rich in protein.[1] It is not simply a filtration edema due to rise in venous and capillary pressure but the result of capillary damage with increased permeability. This hemorrhagic, protein-rich exudate is not indiffer-

From the Circulatory Clinic of the Department of Surgery, Northwestern University Medical School.

1. Zimmermann, L. M., and de Takáts, Géza: The Mechanism of Thrombophlebitic Edema, Arch. Surg. **23**: 937-953 (Dec.) 1931.

ent to the tissues. It will result in fibrosis and further inhibition of venous and lymphatic transport (fig. 2). Much will depend on the rapidity with which one can eliminate this edema before it produces irreversible damage.

OUTLINE OF TREATMENT

In what follows I describe a systematic effort to get rid of the edema in the affected limb as fast as possible.

1. *The Hydrostatic Factor.*—It is common knowledge that dependent edema, whether cardiac or phlebitic in origin, may be reduced by the horizontal or the elevated position. But the elevation is usually slight and consists of a few pillows placed under the knee. A real elevation is effected either by suspending the limb on a Balkan frame or by placing it on an adjustable wooden splint, which can easily be made in any hospital (fig. 3). If this is properly padded, it will produce no discomfort to the patient and should be maintained as long as the edema persists. If after the horizontal position has been assumed the edema reappears, the elevation is continued.

An electric cradle, such as the one shown in figure 4, which was made in the department of physical therapy, may be used in combination with the splint. Some patients, however, whose limbs are hot and throbbing, object to the use of dry heat. In such instances, towels moistened in 33 per cent alcohol and covered with a rubber sheet are very comfortable and seem to diminish the inflammatory reaction. If the skin is protected with petrolatum, the dilute alcoholic dressing will not macerate it.

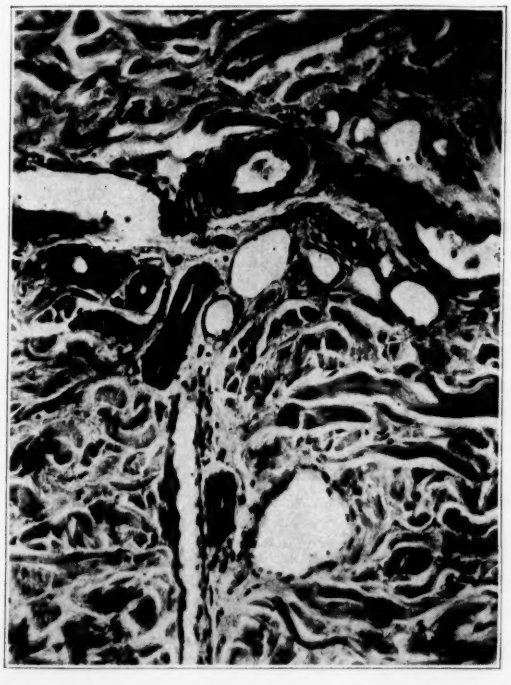


Fig. 2 (Miss E. M., aged 40).—Chronic unilateral edema of unknown origin since the age of 14. Multiple Kondoleon operations performed. This specimen was obtained at the last operation and shows the vessels thickened with perivascular infiltration, the dilated lymphatics and the increased amount of intercellular fluid, which separates thick connective tissue fibers. This damage seems irreversible.

2. *The Diet.*—It has only been recently recognized that fluid and salt restriction have real value in combating surgical edemas.[2] The fluid intake is restricted to 20 ounces (600 cc.) in cases of thrombophlebitic edema and maintained below 32 ounces (950 cc.) with a dry diet for three months after the edema has subsided, just as Temple Fay has suggested for head injuries. Our diet is low in calories, low in fats but liberal in carbohydrates; in this respect it differs from Fay's diet.[3] Salt is restricted, and once or twice a week

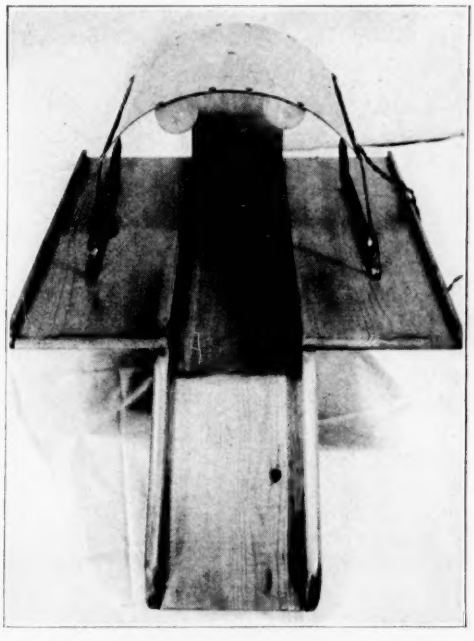


Fig. 3.—A wooden splint, which permits permanent and stable elevation of the edematous limb. The broad wings permit the application of the cradle. The splint is made up in the carpenter shop. It is, of course, well padded with pillows or cotton. The angle at the knee is about 130 degrees, thus elevating the thigh at an angle of 50 degrees.

salt-free days are interposed, the diet consisting of raw fruits, rice or cereals.[4] These salt-free days result in remarkable diuresis and a visible diminution of the edema.

3. *Drugs.*—The most active dehydration can be accomplished with mercury diuretics, notably salyrgan. This is given in an initial dose of 1 cc. intravenously and should be repeated every third or fourth day in 2 cc. doses until the edema disappears. At the same time, ammonium chloride may be given in doses of from 4 to 6 Gm. a day; lately I have started using ammonium bromide, which has the additional value of calming the patient. Before salyrgan is used, examination of the urine is imperative, as an acute glomerulonephritis with hematuria is an absolute contraindication to the use of the drug. In nephrosis and in arteriosclerotic kidneys, according to the experience of reliable workers[5] it will do no harm. I have used it on a patient with a mild albuminuria, with no rise in the percentage of albumin. Enteritis and prostatic hypertrophy are two important contraindications. If intravenous administration is not possible, the salyrgan is given intramuscularly, mixed with a few cubic centimeters of procaine hydrochloride. It should never be given under the skin, as it will cause tissue necrosis.

2. Fay, Temple: Generalized Pressure Atrophy of the Brain, J. A. M. A. **94:** 245-249 (Jan. 25) 1930. Lapp, F. W., and Neuffer, H.: Behandlung der Oedeme bei chirurgischen Krankheiten, Arch. f. klin. Chir. **163:** 345-356, 1931.

3. Fay, Temple: Clinical Considerations Surrounding Head Injuries, S. Clin. North America **11:** 1375-1403 (Dec.) 1931.

4. Breakfast: Tea with lemon or coffee with a drop of cream; raw fruit or baked apple, rice boiled in milk. Lunch: Tomato juice, any vegetable, steamed, without butter or salt, salads with oil, vinegar, pepper, but no salt; raw fruit or fruit salad; cup of coffee. Dinner: Same as lunch, with rice boiled in water or milk; rice and plums; rice and peaches; tea or coffee. (Modified from Lapp and Neuffer.)

5. Engel, K., and Epstein, T.: Die Quecksilberdiurese, Ergebn. d. inn. Med. u. Kinderh. **40:** 187-261, 1931.

Of all these measures, the mercury diuretic has seemed to be the most important factor; its clinical effect is unmistakable. While controls are usually difficult to obtain at the bedside, in one patient it was possible to observe the rate of disappearance of the edema with and without salyrgan (fig. 5).

E. K., a man, aged 46, developed a thrombosis of the left iliac vein following an acute tonsillitis. He was treated by the customary slight elevation of the limb and by sedatives. Twelve days after the left side became affected, a swelling appeared in the right limb. This was treated by an immediate intravenous injection of 2 cc. of salyrgan and repeated on the seventh day, when the edema seemed to reform again. In this patient, a special diet and maximal elevation were not employed.

The effect of salyrgan on the rate of disappearance of thrombophlebitic edema has been studied experimentally. The edema produced by a method published previously [1] subsided much faster under treatment with salyrgan.[6]

4. *Exercise and Massage.*[7]—The patients are kept in bed, but with permission to turn on the side and sit up with a back rest for ten days after the temperature and the pulse have returned to normal. Then very mild stroking massage of the foot and calf is begun for not more than five minutes; the evening pulse and temperature are watched for a possible reaction. If the pulse, which is the more sensitive of the two, becomes more rapid, the massage is discontinued. Otherwise, the five minute massage is given daily for a week, gradually increasing in intensity. The next week a ten minute massage is given, but never higher than the knee. For those who abhor the idea of massage in venous thrombosis, it may be said that the clot in the iliac or femoral vein will not be mobilized by stroking massage of the calves. Naturally, in case of inflammatory reaction, no massage is permissible. The third week the patient may hang his foot down over the side of the bed, and dorsal and plantar flexion of the foot are prescribed for five minutes three times a day. The fourth week after the pulse and temperature have become normal the patient is allowed to be out of bed for gradually increasing amounts of time. The affected limb, which should not be edematous at this time, is supported with a light elastic stocking. This is worn for an arbitrary period of from three to six months. If there is a swelling of the ankles at the end of the day, the patient must elevate the limb during the night and should start out in the morning without edema.

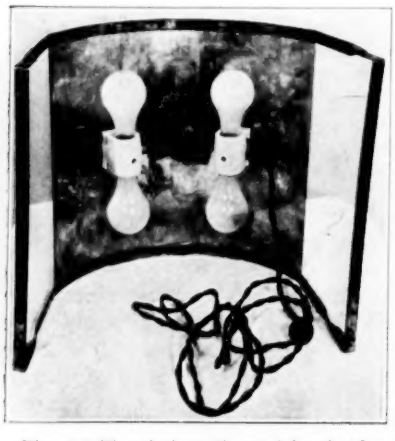


Fig. 4.—Electrical cradle used by the department of physical therapy, Northwestern University Medical School. The cradle is covered by a woolen blanket. The temperature should not exceed 110 F. and should be first controlled with a bath thermometer. The cradle may be in use day and night.

It is seen from this outline that the arbitrary period of six weeks' immobilization after a deep thrombosis has been abandoned, and each patient is treated according to the rapidity with which the pulse and temperature return to normal.

6. Gault, T. J.; Halperin, S. S.; Zimmermann, L. M., and de Takáts, Géza: The Rate of Disappearance of Acute Thrombophlebitic Edema, to be published.

7. Ducuing, J.: Phlébites, thromboses et embolies post-opératoires, Paris, Masson et Cie, 1929, p. 406.

RESULTS

The combined results of sufficient elevation, dehydration and gradual mobilization have been very satisfactory. Five of the patients that could be examined from six months to two years after the occurrence of thrombosis showed no swelling, no induration of the soft parts and no dilatation of the superficial veins. In contrast with this excellent result, patients that were first seen several months or years after the thrombosis with large, nonpitting edemas do not respond so well to the treatment outlined. Mercury diuretics produce only a slight diminution of the edema, which promptly reforms in a few days. Fluid and salt restriction are of some avail. Maximal elevation reduces the edema over night to some extent, but it quickly reforms during the day. The best results in softening the induration and mobilizing the edema can be obtained by frequent applications of dry heat, followed by vigorous massage. Massage at this time, several months or years after the initial thrombosis, may be very vigorous and can soften some of the induration.

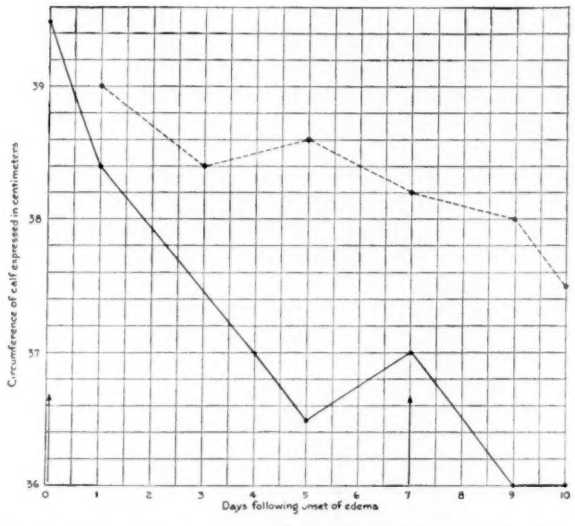


Fig. 5.—Rate of disappearance of thrombophlebitic edema in the same patient with and without salyrgan; the measurements were made 6 inches below the patella: Interrupted line, slight elevation without any salyrgan; straight line, identical position, 2 cc. of salyrgan on the first and seventh day after the onset of edema. Arrows indicate the injections.

In two patients, who were stated to be entirely well before the thrombosis occurred, a slight rise in temperature, a secondary anemia and an occasionally positive blood culture persisted for years. An endocarditis developed in both of them. The edema in these two patients was persistent, and massage was naturally not attempted. These patients, who have an infected clot which continuously reinfects the blood stream, require entirely different consideration.

COMMENT

The few cases that could be managed from the start by the measures outlined resulted in excellent functional and cosmetic results. It is probable that, in large series of cases, refractory edemas will be encountered; two such patients, who had a persistent infection in the clot with periods of activation, were observed. But in most cases the edema to be attacked is due to venous occlusion, with secondary lymphostasis and no obvious

infection. All physicians are familiar with the disconcerting "milk leg" following childbirth, operations or infectious diseases such as typhoid and influenza. Little attention has been paid in the past to any measures that would rid the limb of edema rapidly. The regimen outlined seems to give promising results when instituted from the start. Only a moderate response can be expected in the chronic stage.

SUMMARY

In order to accomplish a rapid disappearance of thrombophlebitic edema in the lower extremities, the following principles of treatment are systematically employed: (1) maximal elevation of the affected limb; (2) restriction of fluid and salt intake, and (3) repeated injections of a mercury diuretic, salyrgan, with adequate premedication. Later, gradual exercise and massage are started, the object now being to prevent reformation of the edema. This management, however, is effective only at the time when the edema appears and is hardly effective in the chronic, irreparable stage of fibrosis. Further trial in a large series of cases is desirable.

122 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

EXTENSIVE CARCINOMELCOSIS OF THE SCALP

CASE CAUSED BY THE APPLICATION OF A PASTE CONTAINING SULPHURIC ACID FOR APPROXIMATELY TWENTY YEARS

CYRIL K. VALADE, M.D., DETROIT

The treatment in this case consisted in the use of a sulphuric acid paste for a cancer cure.

It is well known that the handling of this acid is difficult and somewhat dangerous to the person attempting such a procedure,

Fig. 1.—Extent of the ulcer in January, 1929.

because of its severe caustic properties. My own pharmacist would hesitate to handle this acid in any way except in an aqueous or alcoholic solution. The "old doctor" mixed it and dispensed it himself, and since he is dead just what base he used is not known. The United States Dispensatory mentions three sulphuric acid combinations:

"Simpson proposed a way by which it becomes very manageable. This consists in mixing it with dried and powdered zinc sulphate sufficient to give it a pasty consistency."

Fig. 2.—Basal-cell epithelioma, showing columns or ropes of polyhedral cells.

"Michel's Paste consists of strong sulphuric acid three parts, and finely powdered asbestos one part, thoroughly rubbed together."

"Mixed with saffron to the consistence of a ductile paste, Velpeau found it a convenient caustic not liable to spread or be absorbed, and producing an eschar which is promptly detached."

REPORT OF CASE

Mrs. J. D., born in 1868, an American housewife, was referred to me, July 19, 1928, with an extensive ulcer involving the scalp. She had otherwise enjoyed vigorous health since childhood.

The patient had pierced her scalp with a hat pin in 1908 while rushing to catch a train. She did not discover the injury until at the end of her journey, when she noticed that her hair was matted with blood. The wound became infected and was treated by her physician in Detroit for four years before he diagnosed the ulcer as cancer. Then he applied a paste containing sulphuric acid, but the ulcer continued to enlarge. He would not permit a consultation with any other physician because he said "he did not wish his discovery to become known."

When I first saw the patient, the ulcer was the size of a cereal bowl with no visible pathologic changes of the bone. I advised her to come into the hospital for a few days for consultation, but this she refused to do. After considerable pressure to overcome her resistance, by her son and daughter, she entered the hospital in January, 1929. She continued to apply the ointment containing the sulphuric acid against my advice up to the time of her admittance. The ulcer at this time had increased in size to about the diameter of a soup bowl, and secondary infection had involved the skull, as sequestrums of bone could be picked up with a pair of forceps (fig. 1).

She was seen in consultation with Dr. C. D. Brooks with the thought in mind that some surgical procedure might be indicated. However, this was later proved to be impossible.

The blood Wassermann test, the spinal fluid examinations and the urinalysis were negative.

A biopsy confirmed the clinical diagnosis of carcinoma of the rodent ulcer type.

Roentgenograms showed an extensive osteomyelitic process involving both parietal bones near the vertex in the middle third. At some points the involvement affected the outer table; at others, the inner, and still other areas, both tables.

The result of the observations of the various men who were seen in consultation while she was in the hospital indicated that there was not a great deal to be done. The ulcer was discharging, and the skin around the ulcer was inflamed with a follicular dermatitis. At every pulsation of the meningeal artery the pus would flow over the edges of the necrosed bone. The osteomyelitis was extending into the surrounding bone area

Fig. 3.—Osteomyelitis of the skull.

of the cranium. She was losing a large amount of blood at each dressing, which would produce a secondary anemia. In spite of the hopelessness of accomplishing anything and because I had promised her before entering the hospital that I would do something for her, I insisted on a roentgen treatment. One 80 per cent erythema dose was given at the hospital, January 23, and three subsequent ones of 1½ skin units each were given at my office, March 15, June 10 and August 27.

Fig. 4.—Improvement of the ulcer after roentgen therapy, in March, 1930. Photographs taken by Ruslander.

Continuous wet dressings of a 1:5,000 solution of potassium permanganate were applied to the ulcerative surface. The normal skin surrounding the edge of the ulcer was protected with sterile strips of gauze impregnated with petrolatum. Supportive internal treatment was prescribed and instructions were given her family for other measures for her comfort.

The results obtained by the roentgen therapy justified its use. It certainly lessened the infection and discomfort and destroyed to a great extent the cancerous area, as shown by the second photograph of the scalp.

The patient died in November, 1930, of cancer and secondary anemia, eighteen months after her condition was pronounced incurable.

SUMMARY

A carcinomatous ulceration of the scalp of great size demonstrates the disastrous results following an attempt by an incompetent to treat the ulcer with an acid paste. Comfort was given the patient suffering with an incurable skin disease by roentgen therapy, which controlled the infected area and limited the extent of the cancer.

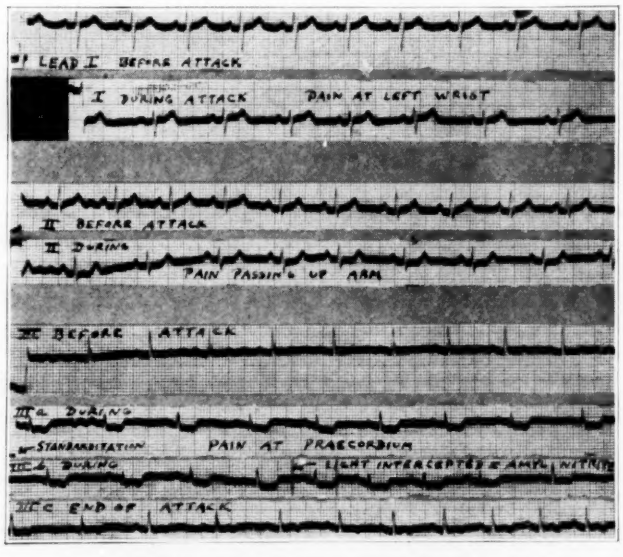
1604 Eaton Tower.

TRANSIENT ALTERATION IN THE ELECTROCARDIOGRAM DURING AN ATTACK OF ANGINA PECTORIS TERMINATED BY THE INHALATION OF AMYL NITRITE

HENRY B. TURNER, M.D., NEW YORK

A man, aged 42, came to the Medical Rest Rooms in April, 1931, complaining of "neuritis" in the left wrist and arm.

One week before, while on the train, he had been conscious of an occasional sharp twinge in the left wrist. During the journey these twinges occurred several times during the day,



Tracings taken before and during an attack of angina pectoris: The upper strip in each lead was taken before the attack; the lower strip, during the pain. In III *b*, arrow indicates inhalation of amyl nitrite. During III *c*, the pain ceased. Alterations in the RT segments are particularly noticeable in lead III.

and it was noticed that with successive attacks they radiated farther up the ulnar side of the arm until, on the day prior to examination, one or two reached the precordium accompanied by a band of constriction about the midchest.

The past history was unproductive save for a poorly defined reference to several sensations of "smothering" during exertion two years before. Periodic examinations had revealed nothing.

The patient was somewhat obese, but apparently in excellent health. No cardiovascular changes were found except slight sclerosis of the brachial, radial and retinal arteries, and tactile hyperesthesia of the skin over the left pectoral muscles and along the ulnar surface of the corresponding arm. The blood pressure was 134 systolic and 88 diastolic in the right arm.

The Wassermann reaction was negative, and a roentgenogram at a distance of 6 feet showed a horizontally placed heart at the upper limit of normal size.

The original electrocardiogram, taken several hours after the preceding anginal attack, showed auriculoventricular conduction at the upper limit of normal, QRS complexes of low normal amplitude, upright T waves, no significant deviation of the RT or ST segments, but a right axial deviation of QRS in

From the Medical Division of the Metropolitan Life Insurance Company.

striking contrast to the radiographic manifestations, which anticipated a left axial deviation.

A few seconds after the completion of this tracing the patient complained that the left wrist was beginning to ache and that he felt an attack coming on. As the electrodes were still in position a second electrocardiogram was taken immediately and amyl nitrite ordered.

While the first lead was being taken, the pain remained at the left wrist. (The patient was frequently questioned as to the location of the pain during this tracing.) The QRS complexes were of lower amplitude than in the original and the ST segment was somewhat elevated.

During the second lead, pain slowly passed up the arm, lower voltage of the QRS group was maintained, and the ST segment was depressed below the iso-electric line.

As the third lead was switched in, pain had already reached the precordium. The voltage of QRS was diminished, T waves virtually disappeared, and a distinct depression of the RT segment with upward convexity was present with maximal deviation at the time of the administration of amyl nitrite.

The pain subsided almost instantaneously with the first inhalation, and in the successive cardiac cycles the voltage of R increased while the RT deviation gradually stepped back toward the iso-electric line, leaving an inverted T_3.

It seems reasonable that this last effect on the RT segment was due to the amyl nitrite, for the patient stated that the attack was becoming worse when the inhalation was offered and that the pain had not yet attained the severity of previous attacks. No further electrocardiograms could be made to see whether the inverted T_3 eventually became upright.

A few minutes after the attack, the patient felt quite well.

SUMMARY

A man, aged 42, apparently in good health, suffered angina pectoris of recent onset.

A disparity was noted between the anatomic axis of the heart as determined radiographically and the electrical axis of the electrocardiogram.

Alterations were noted in the electrocardiogram during an anginal attack which were not present immediately before. These changes included particularly RT deviations, commonly ascribed to coronary thrombosis, and tended to disappear at once with the inhalation of amyl nitrite.

ANEURYSM OF THE LEFT VENTRICLE FOLLOWING CORONARY INFARCT IN LIVING PATIENT

E. I. FOGEL, M.D., CINCINNATI

In 1903, D. G. Hall,[1] reviewing 112 cases of aneurysms of the heart, found post mortem, said: "Aneurysms of the heart must necessarily be of interest rather to the pathologist than to the clinician, for they are outside of the pale of practical diagnosis." He reported that, among the 112 cases of aneurysms of the heart, there were 92 of the left ventricle, over 60 per cent of these being at or near the apex of the heart. These were due to coronary occlusion that occurred between the ages of 40 and 70. Seventy-four per cent were in males and 32 of the 112 died suddenly. More recent reports on aneurysms of the left ventricle show statistics similar to Hall's.

Cases of left ventricular aneurysm, diagnosed ante mortem by the fluoroscope and x-rays, and substantiated at autopsy, have been reported by Lutembacher (two cases),[2] Heitz and Corone[3] (four cases), Kalisch,[4] Jaksch-Wartenhorst,[5] and Christian and Frik.[6] Shookhoff and Douglas[7] report a case in which the patient is still living. Coronary infarction was the etiologic factor in all but the few following exceptions: Heitz and Corone found one case following a shrapnel wound of the heart in a young man; Jaksch-Wartenhorst's case was one of chronic phthisis and presented a calcified mass, about the size of a walnut, which pulsated with each beat of the heart. At autopsy it proved to be in the wall of an aneurysm of the apex of the heart, and was attached to the pericardium. In Christian and Frik's case there was a bulging due to a thickening of the ventricular wall above the aneurysm.

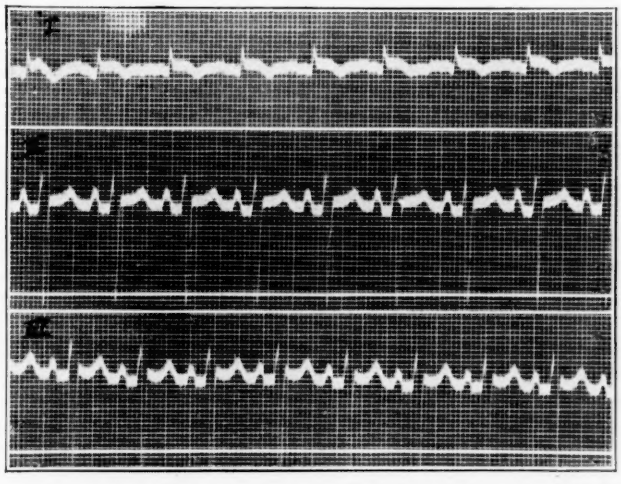


Fig. 1.—Condition, April 17, 1931: high takeoff of T in all leads; cove shaped and sharply inverted T_1.

The better understanding of the symptomatology of coronary infarct and closer study of the heart outline under the fluoroscope promise to uncover more cases of aneurysm of the heart in living patients. Clinical symptoms can at best but suggest the possibility of an aneurysm of the heart. A previous history of coronary occlusion and some myocardial insufficiency, weak heart sounds at the apex, and a systolic bulging or impulse above the normal location of the apex should suggest further roentgen studies for aneurysm of the heart.

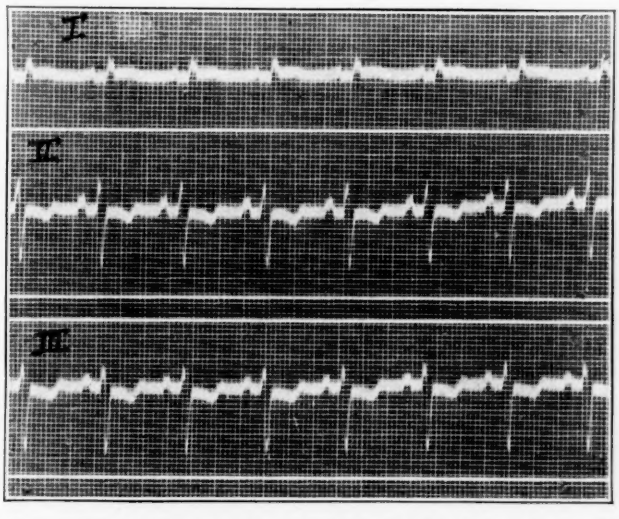


Fig. 2.—Condition, April 20, 1931: high takeoff and cove shaped T_1; low takeoff and inverted T_2 and T_3.

The following case presents classic symptoms of coronary occlusion, followed by physical and roentgen evidence of aneurysm of the heart:

I. H., a man, aged 68, a merchant, had had growing pains at 6, typhoid at 18, and vague digestive disturbances at various times. He was very active, could walk fast without symptoms, and walked one mile four times each day. Several days before the attack, he had pains in both his upper arms on exertion,

From the Cardiological Department of the Jewish Hospital.

1. Hall, D. G.: Cardiac Aneurysms, Edinburgh M. J. **14**: 322, 1903.
2. Lutembacher, R.: Anévrismes du ventricule gauche, Arch. d. mal. du cœur **13**: 49 (Feb.) 1920.
3. Heitz and Corone: Du diagnostic radiologique de l'anévrisme pariétal du cœur, Arch. d. mal. du cœur **16**: 494 (July) 1923.
4. Kalisch, Z.: Ueber ein radioskopisch diagnostizierten und autoptisch bestatigten Fall von partiellen Herzaneurysma, Wien. klin. Wchnschr. **40**: 1078 (Aug. 25) 1927.
5. Jaksch-Wartenhorst, R.: Herzaneurysma in Roentgenbild, Fortschr. a. d. Geb. d. Röntgenstrahlen **33**: 563, 1925.
6. Christian and Frik: Roentgenbefund bei chronischen partiellen Herzaneurysma, Klin. Wchnschr. **1**: 582 (March 18) 1922.
7. Shookhoff, Charles, and Douglas, A. H.: A Case of Acute Coronary Occlusion with Roentgenographic Evidence of the Early Development of an Aneurysm of the Left Ventricle, Am. Heart J. **7**: 95 (Oct.) 1931.

which disappeared with rest. April 15, 1931, while he was walking, he suddenly became very weak and short of breath and reached home only with great difficulty. His condition improved after he had rested. The next morning he awoke with a feeling as if he were dying, although he had no pain.

On admission to the hospital, April 16, the patient showed considerable pallor and cyanosis. The superficial veins of his neck were distended; respirations were 18, with a grunt. The

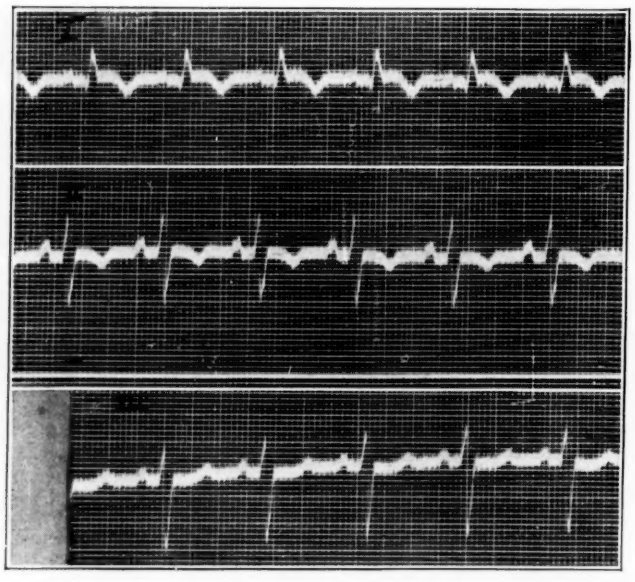


Fig. 3.—Condition, May 5, 1931: high takeoff; cove shaped and sharply inverted T_1; inverted T_2; positive T_3.

pulse was 100 and regular; the heart outlines were normal to percussion. The apex beat was faintly felt 9 cm. from the midline; the heart sounds were faint; no murmurs were heard. In a few days a soft friction rub developed at the apex; the temperature went to 101.4; leukocytes numbered 14,000. The blood pressure, which was 136 systolic and 96 diastolic originally, dropped to 80 systolic and 60 diastolic within one week. There were no râles in the lungs; there was no enlargement of the liver, and no edema. His main complaints were weakness and distress at the base of the sternum. He vomited once. Blood sugar, April 17, was 187 mg. The blood Wassermann reaction was negative. On the 18th there were some hiccups.

An electrocardiogram, April 17, showed in the first lead the RT takeoff above the base line, a cove shaped and sharply inverted T (fig. 1). The ST junction in the second and third leads was above the base line. April 20, the ST junction in the second and third leads was below the base line and with it there was an inversion of T_2 and T_3 (fig. 2). May 5, the ST_2 and ST_3 junctions were at the base line and T_3 had become positive (fig. 3). He was discharged, May 15, with advice not to exert himself in any way.

September 31, he complained that it was necessary for him to walk slowly, because of shortness of breath; but he could walk slowly about half a mile to and from his place of business. Physical examination showed the left pupil to be smaller than the right (the left iris is lighter colored than the right); the pulse was 84 and regular; the blood pressure was 105 systolic and 65 diastolic. Percussion of the heart showed no dulness to the right of the sternum, no particular aortic dulness, and no dulness above the fourth rib. There was dulness present in the fourth left interspace to 11 cm. from the midline; the apex beat could be felt in the left fifth interspace 9.5 cm. from the midline. The point of maximum pulsation was above the apex beat in the fourth interspace and it was synchronous with the first heart sound. The heart sounds were soft; there were no adventitious sounds. Fluoroscopic examination showed in the anteroposterior view a rectangular heart outline instead of a triangular heart, due to a bulging at the upper left border of the heart. This part of the heart expanded synchronously with the first heart sound.

November 27, Dr. Samuel Brown substantiated these observations roentgenologically. He found that fluoroscopic and roentgen examinations of the chest show a moderate degree of pulmonary sclerosis and emphysema. The diaphragm is low and its excursions are impaired.

The heart and aorta are in normal position and size. In the anterior position (fig. 4) the configuration of the heart shadow is more or less square. This is due to a localized bulging of the upper half of the left ventricular curve, which extends farther to the left than the left border of the apex and is more prominent during systole than diastole. In the right anterior oblique position (fig. 5) the bulging is somewhat more pronounced than in the anterior position. In the left lateral position (fig. 6) the anteroposterior diameter of the heart is not increased and the esophagus is not displaced backward.

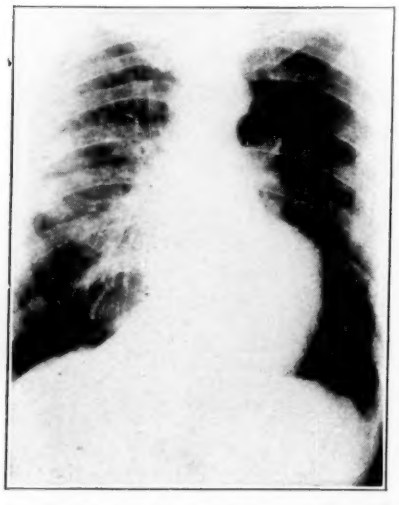


Fig. 4.—Anterior view: square configuration of heart, due to the localized bulging at the upper left border.

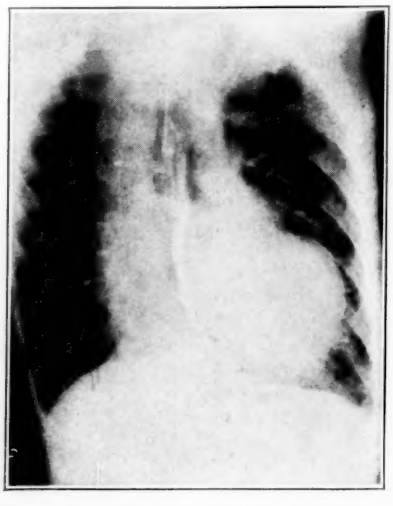


Fig. 5.—Right anterior oblique view: bulging of upper half of left ventricular curve more marked than in the anterior view.

Fig. 6.—Left lateral view: anteroposterior diameter not increased and esophagus not displaced backward.

CONCLUSION

It is my opinion that the localized bulging shown in the upper half of the left ventricular curve is due to an aneurysmal dilatation in the wall of the left ventricle.

Electrocardiograms, November 27 (fig. 7), retained the same characteristics in the first lead as before;[8] i. e., the high takeoff of the RT junction, cove shaped and sharply inverted T deflection. Both T_2 and T_3 are now well developed and positive. In

8. Electrocardiographic and fluoroscopic examinations of March 24, 1932, are essentially the same as those of Nov. 27, 1931, except that the pulsation of the aneurysm is not quite as marked.

all the electrocardiograms there is either a bifid or broad P wave, and slight notching or slurring of the QRS deflection. The QRS is also of longer duration and shows less degree of left axis deviation in the later electrocardiograms. An electrocardiogram taken on the patient's right side shows the customary changes of the shift of the heart, showing that there are no pericardial adhesions holding the heart in position. The location of this aneurysm, in the anterior part of the left ventricle, and the electrocardiographic signs of a type T_1 in which the RT_1 is above the base line and RT_3 below the base line, is in accordance with the finding of Barnes and Whitten[9] and suggests that the original thrombosis involved the anterior descending branch of the left coronary artery. The man is about and is able to assist in a dry cleaning shop.

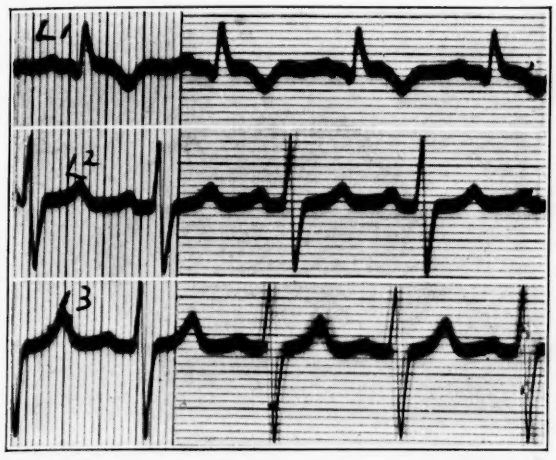


Fig. 7.—Condition, Nov. 27, 1931: high takeoff; cove shaped and sharply inverted T_1.

3539 Reading Road.

BILATERAL DISEASE OF THE INTERNAL CUNEIFORM BONE WITH AN ASSOCIATED DISEASE OF THE RIGHT SCAPHOID BONE (KÖHLER'S)

EDWARD J. HABOUSH, M.D., NEW YORK

In recent years considerable interest has centered around a certain group of closely related disorders of bone. These are Legg-Perthes' disease of the femoral capital epiphysis, Köhler's disease of the tarsal scaphoid, Osgood-Schlatter's disease involving the epiphysis of the tibial tubercle, Kienböch's disease affecting the semilunar bone in the wrist, and Freiberg's infraction of the second metatarsal head.

Most authors are of the opinion that the underlying pathologic condition in these bone disorders is microscopically an aseptic necrosis. Some authorities have observed an infiltration of the bone with fibrous tissue extending from the periosteum. Others have found cystic formation with fibrous tissue infiltration, and some report the changes of an osteochondritis.

I believe that the condition which I present has heretofore been undescribed, as a careful search of the literature has failed to reveal any case with similar pathologic changes. This is a case of bilateral disease of the internal cuneiform bone with an associated disease of the right tarsal scaphoid bone (Köhler's).

A mother presented her child, a white boy, aged 4½ years, at the outpatient department, because he had been complaining of pain in the instep of his foot for the past two weeks. At the same time he began to limp. The pain and the limp were intermittent in character. No history of previous illness was obtainable and the mother, who kept the child under close observation, did not know of any definite history of trauma. Yet the child stated that he had injured his foot while jumping. There was no history of fever or chills. He played like other children, ate and slept well, and had no night cries.

The father, mother and a sister, aged 6 months, were living and well. There were no familial diseases.

The child had been delivered normally and spontaneously. He had rickets at 6 months, sore throats till the age of 2, and measles at the age of 2 followed by acute otitis without suppuration. A tonsillectomy was performed at the age of 2½ years. Since that time he had been perfectly well until he complained of pain in his left foot.

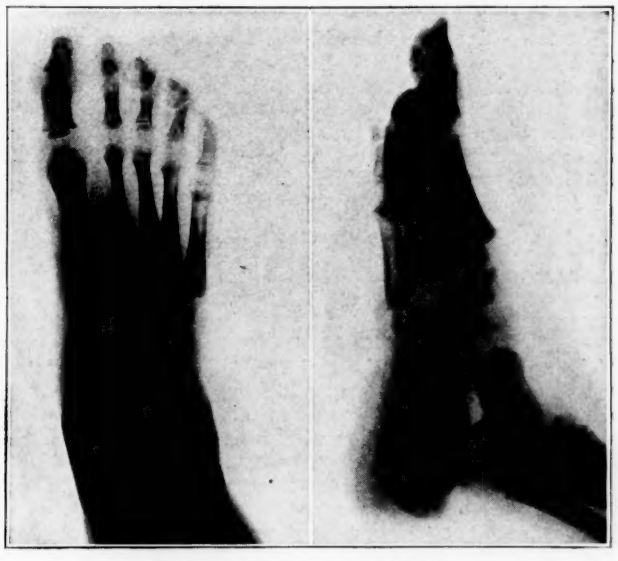


Fig. 1.—Appearance of right foot.

The child walked with a slight limp on the left side. Both hip and knee joints were normal. Examination of both feet, which were well formed, revealed a marked pronation. There was a noticeable swelling along the inner border of the dorsum of the left foot. To palpation, both dorsalis pedis and posterior tibial pulses were good. There was slight tenderness to pressure over the right internal cuneiform and scaphoid bones. Palpation of the left foot revealed some local heat in the region of the swelling previously mentioned, with infiltration of the tissues in this region, and pressure over the internal cuneiform bone was extremely painful. Motions of the right foot were free and painless. As the left foot was held in eversion because of marked peroneal spasm, any attempt at inversion caused pain.

Fig. 2.—Appearance of left foot.

With a questionable history of trauma and localized tenderness in the region of the left internal cuneiform, a fracture had to be borne in mind. The local heat and swelling made it

9. Barnes, A. R., and Whitten, M. B.: Study of the RT Interval in Myocardial Infarction, Am. Heart J. **5**: 142 (Dec.) 1929.

From the Orthopedic Service of Dr. Harry Finkelstein of the Hospital for Joint Diseases. The author is indebted to Dr. Finkelstein and to Dr. Maurice M. Pomeranz for permission to publish this report.

impossible to rule out an osteomyelitis. Both feet were roentgenographed. In the right foot both the internal cuneiform and the tarsal scaphoid bones showed distinct alterations. The cuneiform bone was somewhat larger than normal. Scattered throughout its substance were numerous osteoporotic areas delimited by somewhat sclerotic borders. The scaphoid bone showed a compression sclerosis fairly typical of Köhler's disease. The left foot showed the identical osteoporosis and osteosclerosis noted on the right side. The tarsal scaphoid bone appeared to be normal.

The interesting thing here is the bilateral involvement with active signs in only one foot. This discounts the importance of the possible history of trauma. Thus trauma probably played no important rôle in the etiology. In the right foot the associated Köhler's disease suggests a common etiology with the lesions of the internal cuneiform bones. It is my conception that this process is a type of aseptic necrosis.

123 West Eighty-Sixth Street.

INTRAVENOUS UROGRAPHY IN THE DIAGNOSIS OF RUPTURE OF THE BLADDER

ERNEST G. MARK, M.D., KANSAS CITY, MO.

The necessity for precise and early diagnosis in suspected rupture of the bladder is emphasized by practically all writers on the subject. In the gathered statistics of de Tarnowsky [1] it is quite definitely shown that when a diagnosis has been made and operative procedure instituted within the first twelve hours following injury, the mortality has been approximately 11 per cent. If such diagnosis and operative intervention are postponed into the twenty-four hour period, the mortality has risen to 55 per cent.

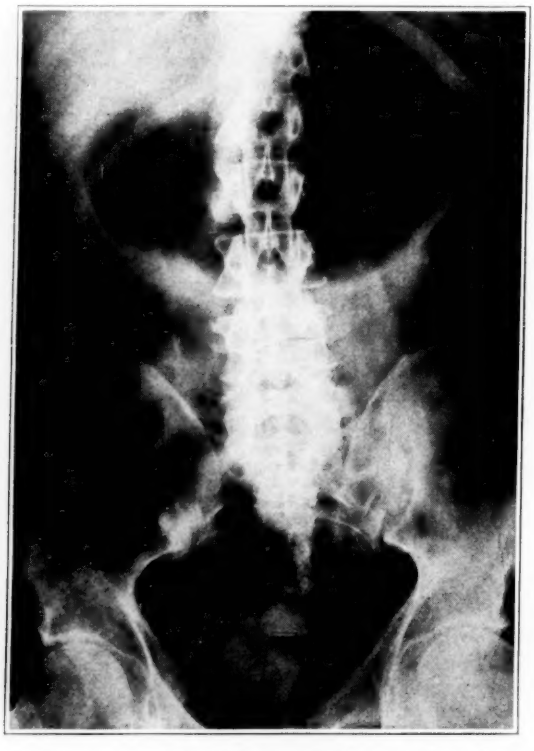


Fig. 1.—Seven minutes after injection of skiodan. Blood clots will be noted in the bladder, with a small amount of the injected medium outside.

The older method of diagnosing a ruptured bladder by the injection through a catheter of a known amount of fluid and the determination of the quantity of the returned fluid is open to the objection of the further diffusion of fluid through the bladder wound and the danger of infection. The method of Vaughan and Rudnick [2] of the injection of air by means of a catheter and the observation of its extension fluoroscopically or by pelvic roentgenogram is open to the same objection plus the danger of air embolism.

The innocuousness of the more recent mediums for intravenous urography suggested their use in the diagnosis of a ruptured bladder in a case lately coming under observation:

J. C. M., a man, aged 66, was admitted to Research Hospital at 8:10 p. m., August 20, in extreme shock. He had been

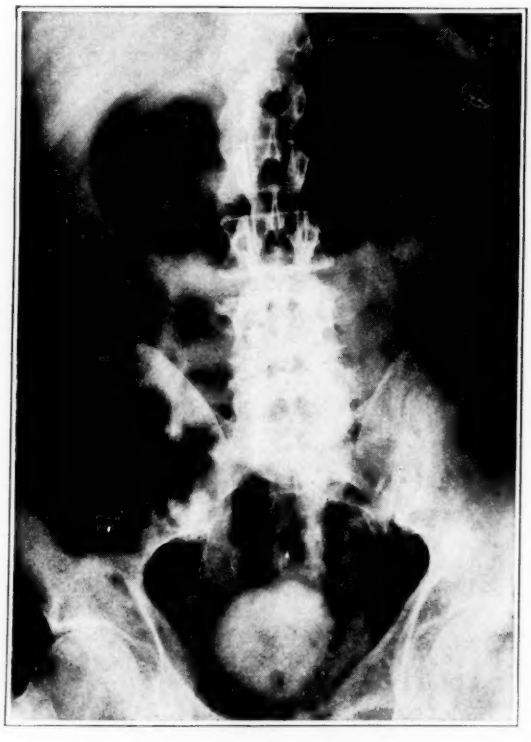


Fig. 2.—Further filling of the bladder, showing clots with more extension of the radiographic medium to the left.

struck in the back at 9 a. m. by a falling oil rig. The history was obtained that he had emptied the bladder sometime between going to the oil field at 7 o'clock and the accident. Since being struck, he had voided a very small quantity of blood mixed with urine, and a catheter obtained only about 30 cc. of blood, though the catheter passed readily into the bladder. A pelvic plate showed a badly fractured pelvis with several spicules from a markedly distorted pubis. As usual in such cases, the abdomen was boardlike, and marked tenderness was present in both flanks. As a ruptured bladder seemed probable, 35 cc. of 40 per cent skiodan [3] was given intravenously while the patient was on a Bucky diaphragm table. Seven minutes following the start of injection the first picture (fig. 1) was taken and eight minutes later, or fifteen minutes after the injection was started, the second plate (fig. 2) was taken.

These roentgenograms showed an extraperitoneal rupture into the space of Retzius with an extravasation most marked on the left. The patient was taken immediately into the operating room and the diagnosis substantiated and repair instituted. A large amount of very bloody urine was found in the preperitoneal space extending almost to the umbilicus. The postoperative course at this date, Aug. 31, 1932, has been uneventful.

The use of this method [4] in suspected rupture of the kidney of lesser degree and in those cases of suspected rupture of the bladder is simple, innocuous and should apply to both intraperitoneal and extraperitoneal ruptures. It appears to be free from the objections that might be held against the usual methods of diagnosis.

Professional Building.

1. de Tarnowsky, George: Rupture of the Bladder, J. A. M. A. **95**: 476-483 (Aug. 16) 1930.
2. Vaughan, R. T., and Rudnick, D. F.: A New and Early Sign of Ruptured Bladder, J. A. M. A. **83**: 9-12 (July 5) 1924.
3. Skiodan is the sodium salt of mono-iodomethanesulphonic acid, containing 52 per cent of iodine.
4. Since submitting this article, the author has received a personal communication from Dr. Jay J. Crane of Los Angeles, who reports the use of this method on two occasions. In one it was absolutely diagnostic; in the other it failed because of lack of renal function.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

BRER RABBIT PURE SUGAR CANE SYRUP (BLUE LABEL GRADE)

(Contains Sulphur Dioxide)

Manufacturer.—Penick and Ford, Ltd., New Orleans.

Description.—Pasteurized "sugar cane syrup" prepared by evaporation of sugar cane juice; treated with sulphur dioxide.

Manufacture.—Sugar cane stripped of its leaves is crushed by machine; the expressed juice is treated with sulphur dioxide and partially clarified by treatment with lime. The precipitate is allowed to settle; the clear liquor is decanted off, evaporated to a definite density to prevent fermentation, and stored in a cold warehouse until ready for packing, when it is heated to 80 C. and automatically filled into cans, which are not cooled and therefore remain hot for a considerable period of time.

Analysis (submitted by manufacturer).—

	per cent
Moisture	28.0
Ash	2.5
Fat (ether extract)	0.0
Protein (N × 6.25)	0.4
Reducing sugars as invert	12.1
Reducing sugars after inversion (as invert)	68.4
Sucrose (copper reduction method)	53.5
Carbohydrates (by difference)	69.1
Iron (Fe)	0.0007
Calcium (Ca)	0.09
Sulphur dioxide (SO_2) (mg. per kilogram)	12

Calories.—2.8 per gram; 80 per ounce.

Claims of Manufacturer.—This sugar cane syrup is for all table, cooking and baking uses.

DR. P. PHILLIPS PURE FLORIDA GRAPEFRUIT JUICE

(With Added Cane Sugar)

Manufacturer.—Dr. P. Phillips Company, Doctor Phillips, Fla.

Description.—Canned Florida grapefruit juice sweetened with added sucrose and retaining in large measure the original natural vitamin content.

Manufacture.—The manufacture and canning are essentially the same as for Dr. P. Phillips Florida Orange Juice (THE JOURNAL, Dec. 3, 1932, p. 1948).

Analysis (submitted by manufacturer).—

	per cent
Moisture	86.2
Ash	0.4
Fat (ether extract)	trace
Protein (N × 6.25)	0.4
Crude fiber	0.0
Reducing sugars as invert	8.9
Sucrose (by copper reduction method)	2.9
Carbohydrates (by difference)	11.8
Titratable acidity as citric acid	1.2

Calories.—0.5 per gram; 14 per ounce.

Vitamins.—Assay demonstrated that from 1.2 to 1.5 Gm. daily was the minimum protective dose against scurvy for 300 Gm. guinea-pigs. The minimum protective dose of juice of fresh grapefruit on the northern market was 2.5 Gm.

Claims of Manufacturer.—This canned sweetened grapefruit juice retains practically all the nutritional values of the natural fruit juice and is intended for all the dietary and table uses of grapefruit juice.

GERBER'S STRAINED CEREAL, LONG-COOKED IN MILK (UNSEASONED)

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained, cooked whole wheat, oats and wheat germ; cooked in milk. The coarse bran is strained out. No added salt or sugar.

Manufacture.—The cereal ingredients are finely ground and pressure cooked with whole fresh milk in a glass lined autoclave. The cooked material is forced by steam into a strainer, where, in an atmosphere of steam, it is forced through perforated monel metal sieves with perforations 0.033 inch in diameter. The strained product is conveyed in a closed system to "vacuum" kettles, where the consistency is standardized, and then automatically filled into cans, which are sealed and cooked for forty-five minutes at 115 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	83.1
Total solids (vacuum, 4 inches mercury, 70 C.)	16.9
Ash	0.7
Fat (Roese-Gottlieb method)	2.8
Protein (N × 6.25)	3.4
Reducing sugars before inversion as lactose	3.4
Reducing sugars after inversion as lactose	3.6
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	9.8
Iron (Fe)	0.001
Calcium (Ca)	0.09
Phosphorus (P)	0.05

Calories.—0.8 per gram; 23 per ounce.

Vitamins.—The method of manufacture efficiently protects the natural vitamins B, E and G.

Claims of Manufacturer.—This strained cereal cooked in milk is especially prepared for infant feeding, children, convalescents and special diets.

QUAKER WHITE CORNMEAL

Manufacturer.—The Quaker Oats Company, Chicago.

Description.—Fine granular white Indian corn cornmeal containing practically no bran or germ.

Manufacture.—Whole white corn is treated with warm water and steam to soften the bran and germ, and is cracked by a special burr machine which loosens the bran and germ. The fine material is bolted out and the remaining mixture of cracked corn, bran and germ is fed into a hominy separator, where the bran and germ are removed from the cracked flinty portion. This flinty, coarsely granular material is dried, cooled, reduced in size by grinding on corrugated rolls, and bolted to remove too coarse or too fine particles. The fine material of desired granulation is packed in cartons under the brand name "Quaker White Cornmeal."

Analysis (submitted by manufacturer).—

	per cent
Moisture	11.8
Ash	0.4
Fat (ether extraction method)	1.0
Protein (N × 6.25)	9.2
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	76.9

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A fine granular white cornmeal for all table uses.

JACK SPRAT BRAND CRYSTAL WHITE SYRUP

(Corn Syrup and Cane Sugar Syrup)

KING KORN BRAND CRYSTAL WHITE SYRUP

(Corn Syrup and Cane Sugar Syrup)

Packer.—Penick and Ford Sales Company, Cedar Rapids, Iowa.

Distributors.—Western Grocer Company, Mashalltown, Iowa, and branches, and A-S Wholesale Company, Plainview, Neb.

Description.—Table syrup; corn syrup base (85 per cent) and sucrose syrup (15 per cent); the same as Penick Crystal White Syrup (Corn and Cane Sugar Syrups), described in THE JOURNAL, April 9, 1932, p. 1268).

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SATURDAY, JANUARY 7, 1933

THE CHEMICAL NATURE OF ENZYMES

A century has passed since Payen and Persoz, in 1832, prepared from malted barley an extract that converted starch into sugar somewhat as strong acids do. This conversion was carried out even though living cells were not present. The effective agent was designated diastase—an expression until recently applied by French writers to all enzymes. Later came the discovery of the proteolytic agent pepsin, in the gastric juice, explaining how meat could be digested in glass vessels as it is in the living stomach. Presently it became customary to distinguish between the organized ferments, that is to say, living organisms such as yeasts and bacteria, and the so-called unorganized ferments. The latter were evidently chemical substances that are the products of living cells. Forty years ago a writer [1] described them as remarkable substances invested with the power of producing molecular rearrangements in products with which they come in contact. In harmony with the chemists of his generation he attributed a protein nature to the active agents; at any rate, they seemed always to be associated with proteins. The adoption of the designation "enzyme" for the unorganized ferments or diastases of old did not alter the uncertainty that attended the consideration of their nature and function.

Since Buchner's clear-cut demonstration, in 1897, that enzymes can unquestionably exert their potencies without the intervention of living organisms, it has become more probable that they function as biochemical catalysts. Thus, one finds enzymes defined in modern textbooks [2] as catalysts produced by living cells but whose action is independent of the living cells that produce them. The physician has long been familiar with some of the enzymes. The words diastase, ptyalin, pepsin, trypsin and erepsin are of frequent occurrence in medical literature, and they have been supplemented by many more representing each newly discovered specific biochemical catalyst. The phosphatases of blood and bone are at present receiving special consideration in relation to the development of osseous structures and the healing of injuries to these.

Waldschmidt-Leitz [3] has recently pointed out that the modern development of enzyme research is directed above all to two particular lines of inquiry: the question of the chemical nature of enzymes and the question of the character and cause of their peculiar mode of action—their specificity. The problems have been somewhat simplified by the successful crystallization of a number of enzymes, including urease, pepsin, trypsin and amylase. All these purified compounds have seemed to their discoverers to be of protein nature. This has been denied by more than one recent investigator; hence one may read about protein-free pepsin. The assumption is that the protein heretofore assumed to be present is merely a contaminant of the actual enzyme. Studies by Tauber [4] leave little doubt, however, that even the purest enzymes are protein in character. It happens, as he has observed, that very dilute active enzyme solutions may easily escape the usual protein tests and thus lead to the erroneous interpretation that enzymes are nonprotein substances. There seems, nevertheless, to be no occasion to abandon the current belief in the protein nature of enzymes. Catalytic potency and protein properties are attributes of the same molecules.

1. Halliburton, W. D.: Textbook of Chemical Physiology and Pathology, London, Longmans, Green & Co., 1891.
2. For example, Cameron, A. T.: Textbook of Biochemistry, ed. 3, New York, Macmillan Company, 1931.
3. Waldschmidt-Leitz, E.: Enzymes, in Annual Review of Biochemistry **1**: 69, 1932.
4. Tauber, H.: The Chemical Nature of Emulsin, Rennin and Pepsin, J. Biol. Chem. **99**: 257 (Dec.) 1932.

UNSOLVED EPIDEMIOLOGIC PROBLEMS

In a recent presidential address before the Institute of Medicine of Chicago, E. O. Jordan [1] defined three approaches that have been utilized in studying the infectious diseases: clinical, pathologic and bacteriologic. A fourth approach, viewing each disease as a whole, "biologically, as a mass phenomenon," is the epidemiologic method. Diphtheria, tuberculosis and food poisoning were cited as examples for the development of his thesis.

Diphtheria, Dr. Jordan points out, has always been subject to cyclic fluctuations, being unimportant in the early half of the nineteenth century in Europe but becoming widespread between 1850 and 1860, so that Hirsch [2] characterized it as "a new phenomenon in the history of pestilence." A decline set in about 1870 and continued through the rest of the century, during the last decade of which the discovery of antitoxin was made by von Behring and Roux. Jordan holds that comparison of death rates for the twenty years just before antitoxin with those immediately after may give an "exaggerated impression of therapeutic efficiency." During the same time a declining trend was manifest also in scarlet fever mortality, without any definite therapeutic advances of a specific nature. In 1926 and

1. Jordan, E. O.: Some Unsolved Problems in Epidemiology, Proc. Inst. Med. Chicago **9**: 185 (Dec.) 1932.
2. Hirsch, August: Handbook of Geographical and Historical Pathology, London, New Sydenham Society **3**: 86, 1886.

the following years the diphtheria mortality showed an increase in cities of Germany, Italy, France, Spain and the United States, and the number of cases reported to the League of Nations from thirty-two countries scattered over the world increased 50 per cent between 1923 and 1929. Even in New York City, where antidiphtheria measures had been most intensively employed over the longest period, the rate of mortality increased.

The explanation for increased mortality and greater prevalence may be found in a number of factors. Jordan dismisses as unlikely the possibility that any change occurred in the mode of transmission, or that serum treatment was neglected. He points out the failure of such hygienic measures as isolation, quarantine, school inspection and removal of common drinking cups to control the prevalence of diphtheria. As probable factors in the changing picture he discusses the soil on which the infection falls; namely, the population involved and its immunity, which might conceivably vary in different generations as it is known to vary between city and country groups and according to age. There are some confusing factors in this connection, as for example the finding of almost 100 per cent Schick negatives in East African natives[3] from a district in which diphtheria has been to all intents and purposes unknown. He further points out the possibility of nonspecific immunity phenomena developing with maturity, the so-called serologic ripening, as observed by him in the increased power of agglutination shown by heifer serum as compared with that of calves, not only against organisms indigenous to the Middle West but against the cholera vibrio as well, to which American cattle presumably have not been exposed. He considers the possible effect of environmental factors, including diet, temperature and humidity, all of which have been shown to influence resistance to injurious agents. Microbic dosage is regarded as an important factor, obviously favored by crowding and the consequent exposure to more frequent and more massive doses of infection. Variations in the nature of the infecting agent, such as changes in type, in rate of toxin elaboration or in the nature of the toxic product, must all be evaluated in an epidemiologic study, as must the effect of associated organisms such as the streptococcus, which may be conveyed at the same time and in the same manner as the diphtheria bacillus. The success of so-called symbiotic serums[4] in the treatment lends importance to this method.

In the light of Jordan's review, physicians must continue to apply all the known standard preventive methods, such as quarantine, taking cultures of contacts, isolation of carriers, serum therapy, and active immunization. While the exact evaluation of the rôle of each cannot now be completely defined, each has sufficient established value to warrant its employment.

Turning to tuberculosis, Jordan emphasizes the factors in the declining death rates from this disease. He joins the ranks of those who believe that tuberculosis may soon disappear; indeed, some writers believe it has already, in all probability, disappeared once or oftener in history. He emphasizes that few other diseases "are so closely interwoven with the warp and woof of human life." The prompt and unfavorable response of tuberculosis mortality records to war conditions and the paradoxically delayed rise, which might have been expected from the depression, are especially interesting. Factors in its epidemiology are tuberculization, or exposure of the population to infection over considerable periods, bad nutritional conditions, and overcrowding, the well known set of circumstances implanted in poverty. From the epidemiologic standpoint nothing has been developed that would make necessary a revision of the present mode of attack on tuberculosis. This attack combines hospitalization, isolation of open cases, early discovery and treatment, social investigation followed by adjustment of unfavorable environment whenever possible, and last, but by no means unimportant, education of the public about the disease and the means of overcoming it. The value of social and educational programs is not always easily visualized; they are among those intangible but essential values hardest to defend whenever difficult times cause established methods to fall under critical scrutiny.

Jordan uses the term food poisoning, acknowledging its lack of definiteness, in preference to the older and discredited term "ptomaine poisoning." Food poisonings fall in general into the toxic type, exemplified by botulism and streptococcic or staphylococcic infections in foods, and the infectious type, due to the presence in foodstuffs of living organisms usually of the paratyphoid group. The toxic types may be expected to develop from cream-filled bakery goods, especially after they have stood at room temperatures, while the infectious variety most often results from milk or meat of a diseased animal, from duck or pigeon eggs, or from contamination of food by mice or rats harboring the organisms of the Salmonella or paratyphoid group.

Physicians and health officers must pause from time to time to reconsider their conceptions of the problems with which they are confronted. They need to know, as Jordan concludes in his critical review of the status of epidemiology, that the last word has not been said with respect to any of the major epidemiologic factors operative in diphtheria, tuberculosis or food poisoning. If that is true of his examples, which are relatively well understood, it must apply with even greater force to other infectious diseases, and especially to such unsolved problems as influenza, infantile paralysis, measles and, to some extent, scarlet fever, whooping cough and other diseases whose epidemiologic status is by no means satisfactory.

3. Kleine, F. K., and Kroó, H.: Deutsche med. Wchnschr. **56**: 46 (Jan. 10) 1930; abstr. Bull. Hyg. **5**: 796 (Oct.) 1930. Fischer, O.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **74**: 244, 1932; abstr. Bull. Hyg. **7**: 431 (July) 1932.
4. von Bormann, F.: Arch. f. Kinderh. **94**: 241 (Oct. 23) 1931.

SHOCK

Until recently, traumatic or surgical shock was the basis for numerous theories. During and immediately following the World War, attacks on the problem from various angles resulted in a satisfying explanation of the genesis of shock. The mechanism of traumatic toxemia, reported by the Special Research Committee [1] and further elaborated by Cannon [2] and others, explains all the characteristic features of shock. The test of subsequent experimentation has not only shown no discrepancies but has served to corroborate the explanation. Injurious products of tissue autolysis, arising in areas of extensive trauma, are absorbed into the circulation. These products affect the circulation in a manner similar to histamine, causing injury to the capillary walls resulting in increased permeability and dilatation. Extensive capillary dilatation results in the withdrawal of blood from currency as effectively as if by external hemorrhage. The individual "is bled to death into his own capillaries." The effects on circulatory function are similar to those of hemorrhage. There is a progressive decline in blood pressure and temperature. The pulse becomes rapid and weak, the respiration rapid and shallow and the skin pale and cold. There is thirst and restlessness.

Here certainly is similarity between shock and hemorrhage. An extensive series of experiments [3] has appeared, tending to show that the manifestations of shock are produced by hemorrhage into the tissues at the site of trauma. These experiments were made on dogs under barbital anesthesia, which in the dosage used is a powerful depressant. In many experiments, variations in blood pressure were used as the only criterion for shock. Adequate control on the factor of anesthesia was not provided. In one experiment [4] there was a rapid decline in blood pressure in several animals shortly after the administration of barbital, and the investigator states that these experiments were discarded. Apparently there were no observations as to whether anemia, such as accompanies severe hemorrhage, was present.

1. Medical Research Committee, Special Report Series 25 and 26, 1919.

2. Cannon, W. B.: Traumatic Shock, in Surgical Monographs, New York, D. Appleton & Co., 1923.

3. Blalock, Alfred: Mechanism and Treatment of Experimental Shock: I. Shock Following Hemorrhage, Arch. Surg. **15**: 762 (Nov.) 1927. Blalock, Alfred, and Bradburn, H. B.: Trauma to Central Nervous System, ibid. **19**: 725 (Oct.) 1929; Distribution of the Blood in Shock, ibid. **20**: 26 (Jan.) 1930. Blalock, Alfred: Experimental Shock, ibid. **20**: 959 (June) 1930; Trauma to the Intestines, ibid. **22**: 314 (Feb.) 1931; Experimental Shock: VI. The Probable Cause for the Reduction in the Blood Pressure Following Mild Trauma to an Extremity, ibid. **22**: 598 (April) 1931; VII. The Importance of the Local Loss of Fluid in the Production of the Low Blood Pressure After Burns, p. 610. Beard, J. W., and Blalock, Alfred: VIII. The Composition of the Fluid That Escapes from the Blood Stream After Mild Trauma to an Extremity, After Trauma to the Intestines and After Burns, p. 617. Johnson, G. S., and Blalock, Alfred: IX. Effects of Loss of Whole Blood, of Blood Plasma and of Red Blood Cells, p. 626. Harris, P. N., and Blalock, Alfred: X. Water Content of the Tissues of the Body After Trauma and After Hemorrhage, p. 638. Butler, Virginia; Beard, J. W., and Blalock, Alfred: XI. Alterations in the Volume of Blood and in the Water Content of Blood and of Muscle That Are Produced by Histamine, ibid. **23**: 848 (Nov.) 1931. Blalock, Alfred; Beard, J. W., and Johnson, G. S.: Experimental Shock, J. A. M. A. **97**: 1794 (Dec. 12) 1931. Parsons, Eloise, and Phemister, D. B.: Hemorrhage and "Shock" in Traumatized Limbs, Surg., Gynec. & Obst. **51**: 196 (Aug.) 1930. Robinson, William, and Parsons, Eloise: Hemorrhage and "Shock" in Traumatized Limbs, Arch. Path. **12**: 869 (Dec.) 1931.

4. Blalock, Alfred: Cause of the Low Blood Pressure Produced by Muscle Injury, Arch. Surg. **20**: 959 (June) 1930.

A recent paper [5] indicates that two criteria are available to distinguish between shock and hemorrhage: In shock the blood becomes more concentrated, as shown by specific gravity, hemoglobin and erythrocyte count; following hemorrhage, dilution of blood occurs. In shock there is widespread capillary dilatation of the viscera, congestion accompanied by edema, and petechial hemorrhages; following hemorrhage the tissues are anemic. The differentiation of hemorrhage and shock is of more than academic importance. It is well known that recovery follows the introduction of physiologic solution of sodium chloride into the circulation of patients suffering from the simple loss of blood. The futility of this procedure in shock has been proved beyond question. The increased permeability of the capillaries, which is a characteristic feature of shock, allows saline solution to escape rapidly into the tissues. Solutions containing acacia or dextrose have been found more effective than saline solutions but not so effective as transfusion of blood. Even the latter is ineffective in profound shock.

Current Comment

HAZARDS OF IODIZED OIL INJECTIONS

A new method that leads to more accurate diagnosis improves the likelihood of more intelligent treatment. Many new procedures have been enthusiastically received simply because they were the products of laboratory technic; the enthusiasm engendered by the alluring simplicity of a "laboratory test" overshadows at times the more important phase of the physical examination of the patient. There are some procedures, however, which have proved valuable as indicators of pathologic changes that could not be sharply differentiated by physical diagnosis alone. Especially in the case of surgery have these procedures been the guide posts whereby the surgeon could proceed more assuredly. Sometimes the possibilities of hazard inherent in a new method have been dimmed by the promising diagnostic aid for the primary pathologic condition. No one will deny the tremendous advance made possible by the use of the roentgen ray and radium in diagnosis and treatment. However, as medical experience has matured, the limitations of both agents are becoming more and more circumscribed; nor can the medical profession be unmindful of the early unfortunate accidents, many of which brought death to members of the medical profession, resulting from the inexperienced use of these potent forms of energy. It has been ten years since Sicard and Forestier introduced into medical practice the iodized oils as diagnostic agents. These appeared to offer great possibilities in the localization and definition of certain lesions in the cavities of the body. Occasionally incidents have been reported showing that the injection and retention in the body of these oils are not without danger. Accidents have occurred,

5. Moon, V. H., and Kennedy, P. J.: Pathology of Shock, Arch. Path. **14**: 360 (Sept.) 1932.

some serious—a few fatal: tuberculous lesions are often unduly irritated; embolic phenomena have been noted; inflammatory reactions are not infrequently induced by the retained oil. In a recent issue of THE JOURNAL [1] appeared a report of the Council on Pharmacy and Chemistry dealing with the dangers of the injection of iodized oils. Accompanying this report were the comments of some critical clinicians who have used this method. The report emphasized anew the necessity for a policy which has guided the Council in its deliberations over the past quarter of a century; namely, that of insisting on due caution in the use of all new methods and preparations until their potentialities for doing damage have been subjected to the test of scientific scrutiny.

METABOLISM IN PREGNANCY

In pregnancy a number of factors not ordinarily operating on normal metabolism may come into play. The situation has been summarized by Du Bois.[1] During the first half of pregnancy, he writes, the weight of the product of conception is negligible in comparison with that of the mother. Later there is a more rapid development of the fetus and also of the placenta and inert liquor amnii. Matters are still further complicated by changes in body weight and by a pressure upward on the diaphragm which increases the labor of respiration. There are also considerable variations in the habits of life and in muscular exercise. After parturition there are the new factors of involution of the uterus and development of the lacteal glands. In some of the earlier studies it has been observed that the energy production of the mother and child together a few days after parturition just about equaled that of the mother before confinement. The extra metabolism of the pregnant woman at the culmination of pregnancy, due in part to the accessory structures as well as to the fetus, was just equaled by the extra metabolism set up in the new-born child by exposure of its body to the outside world, and in the mother by activity of the mammary glands. One group of investigators has, in fact, concluded that the energy production of a unit mass of the mother's protoplasmic tissue remains unchanged throughout the course of pregnancy, and that such increases in the total heat production as occur are due to the increasing mass of active protoplasmic tissue, consisting in large part of the fetal tissues and in lesser part of maternal structures. This widely accepted view has recently been challenged by Rowe and Boyd [2] of the Evans Memorial in Boston. They cannot account for the "overproduction" of energy in pregnant women solely on the basis of the increasing fetal metabolism. The Boston investigators of course do not deny that fetal metabolism plays its part; but their observations lead them to the belief that the often reported constancy of heat output in terms of surface area when the fetal area is added to that of the mother is apparently artefactual. The excess heat production, according to Rowe and Boyd, is apparently the result of a complicated and unknown mechanism, engendered by the state of pregnancy but involving other factors than those of fetal tissue growth alone.

1. Dangers of the Injection of Iodized Oils, J. A. M. A. **99:** 1946 (Dec. 3) 1932.

1. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1927.

2. Rowe, A. W., and Boyd, W. C.: The Metabolism in Pregnancy: IX. The Fetal Influence on the Basal Rate, J. Nutrition **5:** 551 (Nov.) 1932.

Medical Economics

NEW FORMS OF MEDICAL PRACTICE

10. Hospital Insurance Schemes

THE BRITISH PLAN

Many hospitals followed industry in a wild inflation ending in 1929 and are now suffering the ills of industry in the depression. Empty beds, rising deficits and, in many cases, approaching bankruptcy with consequent closure have created a panic psychology among hospital managers that leads them to grasp any proposal that can be made to sound plausible.

British hospitals confronted with somewhat similar conditions have found some measure of relief in their "contributory schemes"; hence it was inevitable that variations of the British plan should be urged in the United States. Many of the advocates of American hospital insurance schemes are claiming to follow the British plan and instancing its success as a reason for the adoption of such schemes here. A survey of developments shows that the schemes have changed greatly, and not always for the better, during their transatlantic trip.

Until within comparatively recent times, hospital care in Great Britain was furnished almost entirely by so-called voluntary hospitals. Most of these were endowed teaching institutions staffed by unpaid medical men, giving free service to the poor. The recent growth of governmental hospitals accompanied by important changes in function have changed their organization and expanded their scope until they now occupy a much more prominent place in the picture of hospital service. As a result of these changes and financial stringency, the old voluntary hospitals found themselves in great difficulties.

The British Health Insurance Law does not provide for hospitalization. With the increase in the demand for hospital care that has taken place in all modern nations, the voluntary hospitals became overcrowded as well as underfinanced. It was to meet this situation that the hospital contributory schemes were established with the idea of securing increased support to the hospitals. The customary fee is 3 pence (about 6 cents) weekly or 12 shillings (about $3) annually. These contributions are collected largely from groups, such as employees of large establishments and trade unions. In many instances employers make additional contributions, frequently duplicating the amounts paid by their employees.

The person making this payment is warned that it does not create a contractual relation with the hospital entitling him to any definite treatment but that it is a voluntary contribution to the support of the hospital and that the conditions of his admission still depend on the capacity of the hospital and the medical regulations.

In spite of all such reservations, these schemes have come to take on more of an insurance character and today the contributors undoubtedly look on their contributions as advance payments for hospital care.

These low-rate contributions are confined to the low-income limits. As a usual thing the limit is fixed around $1,100 for single men or women, $1,500 for married men without dependent children, and about $1,600 for families with dependent children. In practice this entitles the subscriber to hospital service in ward beds.

Of course, this amount does not pay the entire expense of hospitalization but it is often sufficient to meet the deficit that had previously existed. A large portion of the support of the hospital still comes from endowments and gifts.

Some schemes now admit those with higher incomes at a proportionately increased rate, at the same time increasing the benefits to provide for private service and other extra accommodations.

A few of these schemes have very large memberships. The Birmingham one had 411,548 members in 1931. The largest one—the Hospital Saving Association, which has the Prince of Wales as a patron, and a list of other prominent people headed by Lord Dawson of Penn as vice presidents—has over a million members. The total income from the schemes in 1931 was about £2,500,000, or a little over $12,000,000, according to the rates of exchange then in existence.

These schemes increased the movement toward hospitalization in the British Isles, until the facilities of the hospitals began to be exhausted, whereupon the schemes assisted in financing extensions of the hospitals or in building convalescent homes. The growth of the public hospitals has also created new problems. Many patients come under the health insurance benefit and receive cash payments while in the hospital. The public hospitals are authorized to assess patients' payments and to collect them if possible. Some of the contributory schemes are paying this assessment when their members are sent to a public hospital because of lack of room in the voluntary hospitals.

As these schemes have grown, the demands on the staffs of the voluntary hospitals have become so great and the opportunities for private practice accordingly so restricted so as to cause considerable discontent on the part of the physicians. At the annual conference of the British Hospital Contributory Schemes Association in 1931, a physician, Sir Robert Bolam, stated the position of the medical profession in regard to the matter. He declared that the contributory schemes were so overworking the hospital staffs as to cause a deterioration in the work done. "You are pushing the mechanism beyond what it is competent to do, and you have to think of other methods in order that you may undertake the work that is in front of you." He points out that the staffs of the voluntary hospitals consisted almost entirely of specialists who had gone through a long and expensive course in training and whose only hope of income was the private practice outside the hospitals, which was growing less and less. "During the past ten or fifteen years," he said, "we have been getting fewer applicants for hospital posts as they become vacant."

He therefore urged that some portion of the money collected on these contributory schemes be used to pay for the services of the staffs of the hospitals. In a subsequent discussion it was brought out that the British Medical Association is also pressing this policy. In the discussion it was brought out that some schemes were already setting aside certain sums for the payment of medical and surgical fees. It was recognized that general adoption of such a policy would call for considerable reorganization and an increase in the dues.

Since, at present, a large proportion of the income of the hospitals comes from such schemes, there has been a tendency on the part of the managers of the schemes to encroach on the management of the hospitals. As one speaker at the conference said, "there is no doubt that, by means of the power of the purse, those who manage the schemes will soon start managing the hospitals." It should be noted that in none of these schemes is there any profit or hired salesmen but that they are primarily voluntary organizations formed to raise funds for the support of the hospitals. As soon as they began to take on the character of insurance, new problems appeared. None of these schemes attempt to pay the full cost of hospitalization but all depend in part on private charity or public funds.

It is safe to say that no one connected with them would tolerate the suggestion of the entrance of a private, profit-taking company into any phase of the management. All provide that recommendation by a private practitioner is required for admission and that the hospital management remains the final judge of admission or dismissal.

While there is frequent reference to British experience by the promoters of American plans for hospital insurance, the dominating pattern in this country has been the industrial systems of medical care, already so extensive and so largely peculiar to the United States. The principles of business rather than of philanthropy have directed the forms of organization and the methods of management. Actuarial calculations have been taken from insurance companies to transfer the entire burden to contributors and bring profits rather than partial support to the hospitals. The advocates urge that the contributors will not only pay for their own hospitalization but will relieve previous philanthropic givers from some of the burden of caring for free patients. The methods of business salesmanship, perhaps the least desirable phase of modern business, are utilized to a high degree. The power of compulsion, through employment, long a sharply criticized feature of industrial relations, is made the most important agent in extending the scope of such schemes.

The immediate impulse to the recent rapid growth of such schemes has undoubtedly been the industrial situation. The excessive building of governmental hospitals for veterans, at a time when private hospitals were also being erected with little regard to actual demand, exaggerated the subsequent decline in resources until a large percentage of hospitals have for some time been operating at a constantly increasing deficit. Hence the present movement toward insurance schemes takes on some of the characteristics of a panic rush to any port that seems to promise shelter from the storm.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 9:45 to 9:50 a. m. (central standard time) over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

January 9. False Food Advertising Claims.
January 11. Ventilation in the Home.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

January 14. Facial Eruptions.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Dr. Drummond to Give Lane Lectures.—Dr. Jack C. Drummond, professor of biochemistry, University College, London, will deliver the next Lane Lectures in April at Stanford University School of Medicine, San Francisco. There will be five lectures under the general title of "Recent Advances in the Biochemical Study of Nutritional Disorders."

Research Prize Contest.—*California and Western Medicine* announces that the annual clinical and research prize contest has been authorized, and the usual award will be made to the successful contestants at the annual session of the California Medical Association in Del Monte, April 24-27. Any member interested in the rules governing the contest may secure them on application to the society's office, 450 Sutter Street, San Francisco.

Change in Laws on Mental Disorders.—The Northern California Committee on Proposed Changes of the California Commitment Laws for the Mentally Disordered, whose purpose is to sponsor public support for a bill to be introduced in the forthcoming legislature, was formed at a recent meeting of physicians, psychiatrists and interested citizens in San Francisco. Members include Drs. Herman Adler, professor of psychiatry, University of California School of Medicine; Joseph Catton, associate clinical professor of medicine, Stanford University School of Medicine, and Sydney K. Smith, consulting psychiatrist of the Cowell Memorial Hospital, University of California. The proposed bill will, if enacted, humanize the commitment procedure by abolishing the use of jails for detention of the mentally disordered and by facilitating the admission to mental hospitals.

COLORADO

Personal.—Dr. Edward Delehanty has been promoted to the professorship of neurology, University of Colorado School of Medicine, Denver, succeeding the late Dr. George A. Moleen.

Society News.—Speakers before the Medical Society of the City and County of Denver, December 20, were Drs. Thomas Mitchell Burns on "Obstetric Reminiscences and Deductions"; Harold B. Henderson, "Prevention and Treatment of Abortion," and Richard W. Whitehead, "Influence of Certain Hormones on Gestation."

DISTRICT OF COLUMBIA

University News.—Edwin O. Jordan, Ph.D., Chicago, gave the second lecture in the series sponsored by the Smith-Reed-Russell Society before the faculty and students of George Washington University School of Medicine, December 17; his subject was "The Common Cold and Influenza." The regular faculty seminar for December was given by Vincent du Vigneaud, Ph.D., of the department of biochemistry, on "The Chemistry of Insulin."

Society News.—At a meeting of the Association for the Prevention of Tuberculosis, Nov. 28, 1932, speakers included Drs. Shirley W. Wynne, commissioner of health of New York, and Hugh S. Cumming, surgeon general, U. S. Public Health Service.——Speakers before the Medical Society of the District of Columbia, January 25, will be Drs. Walter R. Stokes on "Inadequate Sexual Function in the Male," and Carleton W. Bullard, "Factors in Diagnosis and Operative Technic Which Influence Convalescence After Simple Mastoidectomy." The society will be addressed, February 15, by Drs. Prentiss Willson and Adolphus B. Bennett on "Indications and Technic for the Induction of Labor" and "Cure for Mastoid Fistula with Fat Graft: A Case Report," respectively.

ILLINOIS

Society News.—Speakers before the Iroquois County Medical Society in Watseka, Dec. 15, 1932, included Drs. Francis L. Lederer, Chicago, on "Otologic Problems in General Practice," and Philip A. Halper, Chicago, on "Ophthalmologic Problems in General Practice."——At a meeting of the La Salle County Medical Society, January 5, Drs. Philip Kreuscher, Chicago, and Harold M. Camp, Monmouth, spoke on fractures of the major joints and modern medical problems, respectively.

Chicago

General Practitioner's Night.—Backache from the standpoint of interest to the general practitioner will be discussed at a meeting of the Chicago Medical Society, January 25, known as general practitioner's night. Speakers will include Drs. Charles S. Williamson on "Backache from the Internist's Standpoint"; Vincent J. O'Conor, "Urological Aspect of Backache"; Edward D. Allen, "Backache due to Gynecological Pathology," and Philip H. Kreuscher, "Backache from the Orthopedic Standpoint." The discussion will be carried on by Drs. LeRoy H. Sloan, Philip Lewin, Fremont A. Chandler, Joseph L. Baer and Joseph S. Eisenstaedt.

Attempt to Void Vivisection Law.—A petition signed by six local medical institutions in opposition to a request for an injunction by the Illinois Anti-Vivisection Society was filed in circuit court, Dec. 28, 1932. The injunction would restrain enforcement of the present ordinance governing the release of animals from the dog pound to medical schools for experimental work in medicine. The institutions signing the petition were University of Chicago, Northwestern University, Loyola University, University of Illinois, Chicago Medical College and Michael Reese Hospital. The petition set forth that if the injunction is granted "a great investment in capital and maintenance will be completely destroyed and the petitioners will be denied one of the greatest means of promoting human welfare known to man." In December, 1931, the city council by an overwhelming majority approved the ordinance authorizing the release of unclaimed dogs to medical schools for humane and scientific purposes.

IOWA

Society News.—Dr. Joseph Louis Baer, Chicago, will address the Linn County Medical Society, Cedar Rapids, January 12, on "The Cervix During Labor, Delivery and Post Partum."——A symposium on fractures constituted the program of the Boone-Story Medical Society, meeting in Ames, Nov. 17, 1932; speakers were Drs. Wallace H. Longworth and Albert B. Deering of Boone and William B. Armstrong, Ames. ——Dr. Homer W. Scott, Fort Dodge, addressed the Carroll County Medical Society in Carroll, November 3, on renal tuberculosis.——At a meeting of the Clinton County Medical Society, Clinton, November 17, Drs. Fred M. Smith and Clarence W. Baldridge, Iowa City, spoke on "Functional Diseases of the Heart" and "Rheumatic Heart Diseases," respectively.——Speakers before the Crawford County Medical Society, November 22, were Drs. Nathaniel G. Alcock, Iowa City, on "Transurethral Prostatic Resection"; Edwin Davis, Omaha, "Urinary Antisepsis," and John James Duffy, Denison, "Pyelitis—Diagnosis and Modes of Treatment."——Dr. John H. Peck, Des Moines, discussed "After-Care of the Tuberculous" before the Johnson County Medical Society at its November meeting in Oakdale.——At a meeting of the Keokuk County Medical Society, November 15, in Sigourney, Drs. Frank O. Pershing, Keota, and Roy G. Swinney, Richland, discussed head injuries and gallstones, respectively.——Dr. Daniel F. Huston, Burlington, spoke on acute mastoiditis before the Louisa County Medical Society at its annual meeting in Oakville, November 10.——The Madison County Medical Society was addressed, November 14, by Drs. Arnold L. Nelson, Winterset, and John H. Randall, Iowa City, on "Uterine Bleeding at All Ages," and Dr. Granville N. Ryan, Des Moines, gave a case report of anemia in pregnancy.——A symposium on diseases and parasites of animals transmissible to man was presented before a joint meeting of the Marion County Veterinary Medical Society and the Marion County Medical Society, November 16.——Speakers before the Woodbury County Medical Society, November 15, included Dr. Augustus G. Pohlman, dean, University of South Dakota School of Medicine, Vermilion, on "Sex Differentiation."

MASSACHUSETTS

Discussion of Report of Committee.—The Essex North District Medical Society devoted its ninety-second semiannual meeting, January 4, to a discussion of the majority report of the Committee on the Costs of Medical Care. Dr. Richard M. Smith, assistant professor of pediatrics and child hygiene, Harvard University Medical School, Boston, led the discussion. Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will discuss the minority report at a meeting, January 13, under the auspices of the Pentucket Association of Physicians. All physicians are invited to this meeting, which will be held in Haverhill jointly with the Essex North District Medical Society.

MINNESOTA

Marker at Early Home of Dr. Mayo.—The dedication of a marker at the road in front of the early home of the late Dr. William Worrell Mayo took place in Le Sueur, Nov. 23, 1932. The marker was prepared by the Minnesota State Historical Society and the state highway commission in memory of Dr. Mayo, who built the house. The speakers recalled the part Dr. Mayo played in the aftermath of the Sioux massacre in 1862, when he rendered aid to the white settlers in New Ulm. Among those present were the two sons, Drs. William J. and Charles H. Mayo, Rochester, and the daughter, Mrs. Gertrude Berckman; Dr. Melvin S. Henderson, Rochester, president of the state medical society; Dr. Edward A. Meyerding, St. Paul; Dr. Nels G. Mortenson of the state board of health; Senator Thomas Smullen, Le Sueur; Willoughby M. Babcock, curator of the state historical society, and Mayor Edward Wierwill.

MISSISSIPPI

Society News.—At a meeting of the Winona District Medical Society in Grenada, Nov. 9, 1932, the speakers were Drs. Felix J. Underwood, Jackson, on "Present Trends in Public Health"; Cecil J. Vaughn, Lexington, "Prophylactic Serums and Vaccines," and William F. Hand, Jackson, "Cervical Obstructions." Dr. Samuel S. Caruthers, Duck Hill, was elected president.——The Issaquena-Sharkey-Warren Counties Medical Society was addressed, Dec. 13, 1932, by Drs. Isaac I. Lemann, New Orleans, on peripheral vascular disease, and Willard Bartlett, Jr., St. Louis, "Kidney Complications of Gallbladder Disease"; Dr. Amédée Granger, New Orleans, gave a demonstration of the use of the roentgen ray in the diagnosis of some obscure clinical and surgical diseases.

NEW JERSEY

Personal.—Dr. Nathan O. Ratnoff, New York, was the guest of honor at a reception given by the medical committee of the Jersey City chapter of Hadassah, Dec. 5, 1932, in recognition of his part in the establishment of the medical department of the Hebrew University in Palestine.——Robert P. Fischelis, Ph.M., secretary and chief chemist of the Board of Pharmacy of New Jersey, has been appointed a member of the State Educational Survey Commission, which is to survey the state school system and recommend improvements.

Health at Camden.—Telegraphic reports to the U. S. Department of Commerce, from eighty-five cities with a total population of 37 million, for the week ended Dec. 24, 1932, indicate that the highest mortality rate (24.1) appears for Camden and the rate for the group of cities as a whole, 13.7. The mortality rate for Camden for the corresponding week in 1931 was 13.6 and for the group of cities, 10.7. The annual rate for the eighty-five cities for fifty-one weeks of 1932 was 11.2, as against a rate of 11.7 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

NEW YORK

Society News.—Dr. Charles Gordon Heyd, president, Medical Society of the State of New York, addressed the Medical Society of the County of Monroe, Rochester, Dec. 20, 1932, on "Society and the Physician—A Mutual Obligation and Responsibility."——Drs. John Duff, Jr., and Stanley L. Wang, New York, addressed the Trudeau Society of Mount McGregor, Dec. 17, 1932, on "Surgical Treatment of Urogenital Tuberculosis" and "Treatment of Inoperable and Postoperative Urogenital Tuberculosis," respectively.——Drs. Samuel W. Clausen and William L. Bradford, Rochester, will address the Ontario County Medical Society, January 10, on "Feeding Normal Infants" and "Contagious Diseases," respectively. Dr. Harry M. Smith, Canandaigua, incoming president, will also give an address.

New York City

Course in Medical Physics.—An elementary course in physics with special reference to divisions of the subject that have direct application to physical medicine is in progress at Beth Israel Hospital under the direction of Myron Schwarzschild. It will continue for four months in weekly sessions of two hours each.

Portrait Unveiled.—At a meeting of the Medical Society of the County of Kings, Dec. 20, 1932, a portrait of the late Dr. Ralph H. Pomeroy, president of the society in 1915, was unveiled. Drs. David Riesman, Philadelphia, and George J. Heuer addressed the society on "The Oldest Medical School in America" and "Tumors of the Thorax," respectively.

Personal.—Dr. Livingston Farrand, president of Cornell University, was recently elected chairman of the board of trustees of the Carnegie Foundation for the Advancement of Teaching.——Dr. Francis Peyton Rous of the Rockefeller Institute for Medical Research has been elected a corresponding honorary member of the section of comparative medicine of the Royal Society of Medicine, London.

University News.—Dr. Anton J. Carlson, Chicago, delivered the first Herbert Swift Carter Memorial Lecture at Columbia University College of Physicians and Surgeons, Dec. 12, 1932, on "Recent Investigations on the Physiology of the Gastro-Intestinal Tract." Dr. Carter was an assistant clinical professor of medicine at Columbia and was known for his work on the digestive tract. He died in 1927.

NORTH CAROLINA

Testimonial Dinner.—Dr. John Peter Munroe and Dr. Andrew Johnson Crowell, Charlotte, were guests of honor at a banquet given by the Mecklenburg County Medical Society, Dec. 7, 1932, at the Charlotte Country Club. Among many speakers who paid tribute to the two physicians were Drs. Calvin S. McLaughlin, John Hill Tucker, Robert L. Gibbon, Walter O. Nisbet, Robert H. Lafferty, Oren Moore, James M. Northington, Lewis B. McBrayer, Southern Pines, secretary of the Medical Society of the State of North Carolina; James M. Parrott, Raleigh, state health officer, and John T. Burrus, High Point, president of the state board of health. Dr. Charles M. Strong was toastmaster. Dr. Munroe, for many years head of the old North Carolina Medical College in Charlotte, was graduated in 1885 from the University of Virginia. Dr. Crowell, a graduate of the University of Maryland, has practiced in Charlotte since 1893.

OHIO

Society News.—Dr. Donald E. Yochem addressed the Columbus Academy of Medicine, Nov. 28, 1932, on "Hemoglobin in Pulmonary Tuberculosis."——Dr. Wesley W. Beauchamp, Lima, addressed the Crawford County Medical Society, Bucyrus, November 7, on "The Mental Factor in Disease."——Dr. Wells Teachnor, Columbus, discussed the injection method of treating internal hemorrhoids at a meeting of the Hempstead Academy of Medicine, November 14.——Dr. Edward C. Rosenow, Rochester, Minn., addressed the Stark County Medical Society, Canton, November 1, on "Prophylactic Inoculation Against Colds, Sore Throats and Influenza."——Dr. Joseph A. Muenzer, Toledo, addressed the Ottawa County Medical Society, Oak Harbor, on recent advances in ovarian therapy.——The Doctors' Symphony Orchestra of Akron gave the first concert of the winter season, December 8. Dr. Alexander S. McCormick is director.——Dr. Elijah J. Gordon, Columbus, addressed the Darke County Medical Society, Greenville, December 9, on periodic health examinations.——Drs. Carl D. Camp, and Louis H. Newburgh, Ann Arbor, Mich., addressed the annual joint meeting of the medical societies of Fulton, Henry, Defiance and Williams counties at Bryan, December 1, on practical kidney function tests and causes of headache, respectively.——The annual joint meeting of the Toledo Academy of Medicine and the Toledo Dental Society was held, Dec. 2, 1932; speakers were Dr. Evan G. Galbraith, on medical aspects of Vincent's angina, and Clyde C. Sherwood, D.D.S., on dental aspects.——Dr. Max Ballin, Detroit, addressed the Hancock County Medical Society, Findlay, Dec. 7, 1932, on parathyroidism.——Dr. Elmer G. Horton, Columbus, addressed the Licking County Medical Society, Newark, Nov. 25, 1932, on "Feeding Problems of Children."——The Ohio Federation of Public Health officials was organized, Nov. 17, 1932, during the annual conference of health officers at Columbus, with Dr. Guy T. Wasson, Bucyrus, as president.——Dr. Emil Novak, Baltimore, addressed the Academy of Medicine of Cincinnati, Dec. 19, 1932, on "Gynecological Endocrinology and Organotherapy."

PENNSYLVANIA

County Health Survey.—Dr. Joseph W. Mountin of the United States Public Health Service will shortly begin a survey of public health work in Delaware County through the cooperation of the county medical society, the county tuberculosis association and other health and civic agencies. It will be the aim of the survey to obtain accurate information on all health activities of the county, to formulate effective methods for preventing and combating epidemics, to coordinate the work of agencies in the health field, and to prevent and correct overlapping and waste of effort.

Philadelphia

Public Health Lectures.—Dr. Michael G. Wohl delivered the fourth of a series of public lectures at Mount Sinai Hospital, Dec. 28, 1932, on "High Blood Pressure and Kidney Disease." Coming lecturers in the series are:

Dr. Harry Lowenburg, How to Keep Your Children Well, January 28.
Dr. Jacob Walker, Prenatal Care, February 22.
Dr. Frank E. Leivy, Overweight and Underweight, March 22.
Dr. Abraham I. Rubenstone, Diabetes, April 26.
Dr. Sigmund S. Greenbaum, Care of the Skin and Hair, May 24.

Previous lectures have been given by Drs. Bernard Mann, on cancer; Joseph A. Langbord, tuberculosis, and Joseph Edeiken, heart disease.

Symposium on the Anemias.—The second group of postgraduate seminars of the Philadelphia County Medical Society is a symposium on the anemias. Dr. Richard P. Custer presented the first, January 6, on "Origin and Destruction of the Blood." He will continue the discussion, January 13, and Dr. Jefferson H. Clark will speak on "Classification of the Anemias." Dr. Clark will present an address on "The Technic of Blood Studies," and Walter J. Crocker, V.M.D., on "Technic with Special Reference to the Schilling Count," January 20. Drs. William Egbert Robertson and Truman G. Schnabel will give the last two of the series, January 27, on "Clinical Aspect of the Anemias" and, February 3, on "Treatment of the Anemias," respectively.

TENNESSEE

Flexner Lectures at Vanderbilt.—Dr. Francis R. Fraser, professor of medicine, University of London, will give the third series of Abraham Flexner Lectures at Vanderbilt University School of Medicine, Nashville, during February and March. Dr. Fraser will lecture on "The Principles of Therapeutics" and will hold clinics under the auspices of the department of medicine. The Abraham Flexner Lectureship, founded at Vanderbilt in 1927 by Mr. Bernard Flexner, New York, is awarded every two years. Previous lecturers have been Dr. Heinrich Poll, director of the Institute of Anatomy, University of Hamburg, Germany, and Sir William Hardy, director of the Low Temperature Research Station, Cambridge, England.

Society News.—Dr. Harold Swanberg, Quincy, Ill., addressed the Jackson County Medical Society in Jackson, December 6, on "Radium Therapy in General Practice."——Dr. Stuart McGuire, Richmond, Va., addressed the Sullivan-

Johnson County Medical Society at Kingsport, December 7, on acute abdominal disorders.——Dr. Martin H. Fischer, Cincinnati, gave an address on diseases of the kidneys at a meeting of the Gibson County Medical Society, Trenton, November 28.——Dr. George C. Williamson, Columbia, addressed the Giles County Medical Society, Pulaski, in November, on infections of the hand.——The sixth annual conference for public health workers was held in Nashville, Dec. 15-17, 1932. Speakers included Drs. Hugh S. Cumming, surgeon general, U. S. Public Health Service; John Overton, health officer of Nashville; Waller S. Leathers, Nashville, and Eugene L. Bishop, state health commissioner.

WISCONSIN

William Snow Miller Lecture.—The sixth annual William Snow Miller Lecture of the Phi Beta Pi medical fraternity at the University of Wisconsin, Madison, was delivered by Hermann Ranke, Ph.D., Carl Schurz professor of history at the university, December 16, on "Surgery in Ancient Egypt." Dr. Ranke is professor of Egyptology at the University of Heidelberg, Germany.

Society News.—Dr. Evarts A. Graham, St. Louis, addressed a combined meeting of the Dane County Medical Society and the Third Councilor District Medical Society at Madison, Dec. 14, 1932, on "Surgery in the Hypoglycemic State Due to Islet Tumors of the Pancreas and Other Conditions."——The Forest County Medical Society is now organized with a separate charter, the house of delegates of the State Medical Society of Wisconsin having detached it from the Oneida-Forest-Vilas County Medical Society at the recent annual meeting.——Drs. John W. Towey, Powers, Mich., and James C. Colignon, Green Bay, addressed the Brown-Kewaunee County Medical Society at Hickory Grove Sanatorium, Nov. 15, 1932, on collapse therapy in tuberculosis.——Dr. John W. Harris, Madison, addressed the Chippewa County Medical Society, Chippewa Falls, Nov. 15, 1932, on toxemias of pregnancy.——Drs. Roy P. Potter, Marshfield, and Stephen E. Williams, Chippewa Falls, addressed the Clark County Medical Society at Owen, Nov. 16, 1932, on "Diagnosis of Bone Diseases" and "Newer Things in the Practice of Medicine and Surgery," respectivelv.——Dr. William H. Hengstler, St. Paul, addressed the Pierce-St. Croix County Medical Society, River Falls, Nov. 3, 1932, on functional neuroses.——Drs. Frederick A. Stratton, Milwaukee, and Harry M. Richter, Chicago, addressed the Racine County Medical Society, Racine, Nov. 17, 1932, on acute lesions of the upper part of the abdomen and on thyrotoxicosis, respectively.

GENERAL

Pan-American Medical Congress.—The fourth congress of the Pan-American Medical Association will be held in Dallas, Texas, March 21-25, under the presidency of Dr. John O. McReynolds. Dr. Jose E. López-Silvero, Havana, Cuba, is executive secretary.

Registry of Record Librarians.—At the September session of the Association of Record Librarians of North America, in Detroit, a registry for record librarians was established "to fill a need long felt by record librarians and hospital superintendents." Although the association will provide for registration of properly trained librarians, it will not act as an employment agency. Record librarians who are active members in good standing in the association may register without examination within one year after the establishment of the registry. Newly trained record librarians may register after submitting evidence of proper character and passing an examination to be set by the board of registration. A certificate of registration will be issued to each approved candidate. Complete information may be had from Miss Evelyn Vredenburg, Woman's Hospital, New York.

Society News.—The fall meeting of the American Society for the Study of Asthma and Allied Conditions was held in New York, Dec. 10, 1932. Among the speakers were Drs. William S. Thomas and Maximin D. Touart, New York, on "Analysis of the Late Vaccine Reaction"; Dr. Herbert Old, Philadelphia, "Bronchial Asthmatics from the Medical Insurance Standpoint"; Dr. Robert A. Cooke and Arthur Stull, New York, "Preparation and Standardization of Pollen Extracts."——Dr. Vilray P. Blair, St. Louis, was elected president of the Southern Surgical Association at the annual meeting in Miami, Fla., in December. Drs. William Barnett Owen, Louisville, Ky., and E. H. Adkins, Miami Beach, were elected vice presidents.——Dr. Walter A. Gekler, Albuquerque, N. M., was elected president of the Medical and Surgical Association of the Southwest at the close of the annual meeting in Albuquerque, Dec. 10, 1932. Other officers are Drs. David M. Davis, Phoenix, Ariz., and Zalmon E. Funk, Santa Rosa, N. M., vice presidents, and William Warner Watkins, Phoenix, secretary. The next annual session will be held in El Paso, Texas.

Recommend Revision of Veterans' Legislation.—The United States Chamber of Commerce through a special committee on federal expenditures presented to the Joint Congressional Veterans' Committee in Washington, Dec. 20, 1932, recommendations for savings in the present expenditures for veterans' relief. Affirming that adequate provisions for veterans whose service brought them disabilities must be maintained, the chamber's committee made the following specific suggestions for savings:

1. Denial of compensation for all disabilities not clearly proved to be service-connected.
2. Repeal of legislation granting hospitalization for disabilities not attributable to service.
3. Limiting government insurance "to the purposes for which it was undertaken."
4. Placing compensation paid to dependents on a basis of necessity and service-connected disability and death.
5. Returning disabled emergency officers to a disability compensation status.
6. Placing veterans' relief legislation on a scientific basis, with consequent reduction in administrative costs.

Savings estimated at $400,000,000 could be made through these changes in legislation affecting veterans, the committee declared. Substantially the same recommendations were presented at the same session by the National Economy League.

Report of Gorgas Institute.—The annual report of the Gorgas Memorial Institute of Tropical and Preventive Medicine, covering the activities of the Gorgas Memorial Laboratory in Panama, for the period Nov. 1, 1931, to Oct. 30, 1932, has been made public. A study was made on the effect of mass treatment of malaria in a native population in Panama, with quinine and plasmochin. In July, a station was established in the basin of the Tuira River, Province of Darien, where attention is being given to treatment of yaws with carbarsone and other drugs without the use of injection methods in an attempt to develop an oral treatment. Research was carried on in regard to the protozoologic, immunologic and pathologic features of malaria in Panama monkeys. Work was done to determine the susceptibility of local monkeys to trichinae, and whether they develop an immunity as do rats. Other investigations include those on the protozoa of the alimentary and genital tracts of the monkeys; anthropology and collection of skulls; genital tracts and uterine contents of monkeys and other animal life. Special studies on malaria in unprotected, insanitated areas were carried on in five river villages located on the Chagres River banks. Mass treatment for the entire population was given to prevent mosquito infection. The financial report disclosed that the total cash disbursements for the year were $47,484.50, an excess of $6,332.49 over the total cash receipts.

Board for Certification of Skin Specialists.—The American Board of Dermatology and Syphilology for the certification of specialists in this branch of medicine was incorporated Nov. 25, 1932, with the following members:

Dr. Howard Fox, New York, president.
Dr. William H. Mook, St. Louis, vice president.
Dr. Clarence Guy Lane, Boston, secretary.
Dr. George Miller MacKee, New York, treasurer.
Dr. Harold N. Cole, Cleveland.
Dr. Howard Morrow, San Francisco.
Dr. Jay F. Schamberg, Philadelphia.
Dr. Arthur W. Stillians, Chicago.

Four of the members were designated by the American Dermatological Association and four by the Section on Dermatology and Syphilology of the American Medical Association. During the first two years following incorporation of the board, certificates will be issued without examination to certain specialists of high professional attainment and prestige. For the present it is requested that applications be restricted to those who have limited their practice to dermatology and syphilology for at least fifteen years or to those of professorial rank in class A medical schools. All who wish to receive certificates must fill out application blanks and comply with certain other requirements. Examinations for other groups will be held in the fall of 1933, notices to be published in due time. Application blanks and information may be obtained from Dr. C. Guy Lane, 416 Marlboro Street, Boston.

CORRECTION

Health Promotion Service.—In THE JOURNAL, December 17, appeared a statement relative to the Health Promotion Service, indicating that Dr. Howard M. Jamieson of Memphis, Tenn., had been associated with this organization. Dr. Jamieson informs us that he resigned promptly from any connection with the organization shortly after the arrangements were made and that for many months he has not been in any way associated with it.

Government Services

Annual Report of Public Health Service

The general health of the people of the United States has been maintained at a very high level during the last two and one-half years of unfavorable economic conditions, according to the sixty-first annual report of the U. S. Public Health Service, for the fiscal year ended June 30, 1932. The report covers the one hundred and thirty-fourth year of the service. A new low death rate for tuberculosis was established for the United States in 1931, reports from forty-five states giving an aggregate rate of 66.3 per hundred thousand of population as compared with 68.8 in 1930, which was the lowest rate recorded up to that year. For smallpox, the rate (24.4 cases per hundred thousand) recorded by the public health service was the lowest since 1916. A serious epidemic of poliomyelitis caused the highest rate for this disease since 1916, the aggregate case rate for forty-two states in 1931 being 15 cases per hundred thousand. The diphtheria death rate in 1931 was 5 per hundred thousand, the second lowest ever recorded; the lowest rate was reached in 1930, when it was 4.9 per hundred thousand. For the calendar year 1931, the death rate for typhoid was 4.6 per hundred thousand. Thirty-seven states and the District of Columbia reported a total of 675 cases of tularemia; 1,578 cases of undulant fever were reported from forty-five states and the District of Columbia, and the eastern type of Rocky Mountain spotted fever was reported from fifteen states and the District. No case of plague was reported in continental United States during the calendar year 1931 or the first six months of 1932, but fourteen plague-infected ground squirrels were found in California during 1931 and four plague-infected rats in Los Angeles in April, May and June, 1932. Reports for forty-six states give an aggregate influenza death rate of 18.7 per thousand of population in 1930 and 26.1 in 1931, two low rates which helped keep the general death rate down. The birth rate for 1931 was 17.8 per thousand of population; there were 61.7 deaths of infants under 1 year of age per thousand live births. Both of these rates are the lowest recorded. Preliminary reports indicate that the general death rate for 1931 will be low, but final figures are not available. Reports from states with an aggregate population of more than 63,000,000 give a rate of approximately 11 per thousand of population. At domestic ports, 373,034 alien passengers and 897,788 alien seamen were examined by medical officers, under the immigration laws. Of this number, 15,115 passengers and 1,367 seamen were certified for various diseases and disabilities. No disease was imported into the United States from foreign countries; one case of smallpox and one case of typhus fever reached quarantine stations, where the patients were detained. One case of cholera occurred on a steamer at Manila. In administering quarantine regulations, officers of the public health service inspected 18,048 vessels and 2,407,154 persons; at border stations 88,152 travelers were inspected, exclusive of 8,798,598 persons in local interurban traffic who were under careful observation; 17,387 persons arriving at official airports of entry were given medical examinations prior to entry into this country. In its hospital work, more than 343,000 persons applied for treatment and other medical services. At the National Leper Home in Carville, La., 366 lepers were under care by the service. The construction of one of the two narcotic farms to be administered by the public health service was begun during the year near Lexington, Ky. A study on the relative growth-promoting capacity of raw and heated milk was made on nearly 4,000 children living in ten different states. In addition to special investigations in industrial hygiene and child hygiene, concentrated study was made on cancer, leprosy, heart disease, malaria, plague, Rocky Mountain spotted fever, tularemia, tick paralysis, relapsing fever, undulant fever, poliomyelitis, psittacosis, trachoma, scarlet fever, meningitis, nutritional diseases and industrial diseases. In a study of children of psychotic parents it was shown that, although such children were subject to the double handicap of poor heredity and unfavorable environment, they showed less frequent deviations from an accepted "normal behavior pattern" than did a group of unselected children from a rather better than average public school. It was also shown that among psychotic adults there is a low marriage rate, a high sterility rate and a tendency to small families. In the control of venereal diseases, forty-three states reported 422,191 cases under treatment: 260,564 of syphilis; 158,083 of gonorrhea, and 3,544 of chancroid. This represents an increase for all venereal diseases over the preceding year of 8.4 per cent; for syphilis, 13.4 per cent and for gonorrhea, 1.4 per cent. Although $15,126,892.69 was appropriated for the fiscal year, the financial statement of the service indicates an expenditure of $14,374,751.80.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 12, 1932.

A Successful Method of Prevention and Treatment of Distemper

In previous letters, the researches promoted by the *Field* into the distemper of dogs have been reported. The Field Distemper Council has now issued a final report on the result of ten years of research, of which the cost has been borne by English and American subscribers. The results achieved are valuable not only as regards prevention and treatment but as throwing light on virus diseases of man and other animals. When the fund was inaugurated, distemper was regarded as an almost inevitable occurrence in every dog's life. No method of prevention was known, and treatment was purely empirical and palliative. Thanks to the work of Dr. P. P. Laidlaw, F.R.S., and Mr. G. W. Dunkin, a veterinary surgeon, the cause of the disease has been defined and a successful method of preventive inoculation introduced; also a useful curative treatment. Proof was early obtained that the disease is due to an ultramicroscopic, filter-passing organism. A vaccine containing the killed organism and antiserum from the blood of an animal rendered immune by repeated administration of virus were produced. It was found that a healthy dog could be given lasting protection by inoculation of vaccine followed in a fortnight by inoculation of virus. Later it was found that an animal could be immunized by simultaneous inoculation on different sides of the body with antiserum and virus. Antiserum used alone lessened the severity of an attack if given early; it also gave temporary protection to animals exposed to infection. These achievements may soon have a wider interest. Distemper has recently been found among fur-bearing animals nearly related to the dog (silver fox) or ferret (fitch, mink, fisher). Hence the discoveries are likely to have an important commercial value where these animals are farmed. Not only have the experiments been successful but trials on a large scale, notably at kennels of foxhounds, have confirmed the results. The supply of the products has now passed to commercial laboratories in Great Britain and the United States.

Vital Statistics: A Healthful Year

It is striking that in the present period of industrial depression and unemployment, unprecedented both in intensity and in duration, the general health of the population has been remarkably good and has even improved. The registrar-general's statistical review for 1931, which has just been published, shows a death rate of 12.3 per thousand persons living, 0.9 above that for 1930. That rate, however, was the lowest ever recorded, largely because of the exceptionally mild weather in the early part of the year, when the greatest number of deaths occur. The higher rate for 1931 is a reflection of the more severe weather of the early part of the year. Infant mortality was similarly affected, the deaths of children under 1 year being 66 per thousand live births, against 60 in 1930. That year and 1928, however, are the only years that have shown a lower mortality than 1931. The death rate for cancer was 1,484 per million persons living, against 1,454 in 1930. But if allowance is made for the difference in the age constitution of the population (which is constantly becoming greater) the increase in the cancer rate becomes much smaller. Tuberculosis again furnished a new low record, 896 deaths per million living. Road accidents due to mechanical vehicles caused 5,892 deaths. The figures for the preceding four years were 4,452, 5,196, 5,752 and 6,342. The decrease in 1931 is the first that has occurred since 1921, the figures having steadily increased previously. The birth rate was 15.8 per thousand persons living, the lowest on record and 0.5 below that for 1929 and 1930.

British College of Obstetricians and Gynaecologists

The house that is to serve as the headquarters of the recently formed College of Obstetricians has been declared open. The ceremony was performed by the Duchess of York in the presence of a distinguished company. The president, Prof. Blair Bell, conferred the honorary fellowship of the college on Sir Robert Jones who is president of the Association of Surgeons of Great Britain, and on Prof. W. P. Graves of Harvard University. He said that every professor of obstetrics and gynecology not only in the British Isles but also in the dominions and dependencies beyond the seas, and probably more than 90 per cent of all recognized teachers of their subject, were fellows or members of the college. Such a degree of association was not to be found in the records of any university or college in the empire, as far as the three great branches of medicine were concerned. The ceremony indicated the important position reached in the advance of obstetrics and gynecology to its rightful place in the hierarchy of medicine. Until 1886 there was in this country no compulsory training or examination in obstetrics for license to practice, and not until the foundation of their college in 1929 was there a collegiate organization in the subject in any part of the world. There were societies, teaching bodies and examining boards, but nowhere an academic advisory and executive body such as the college, which united all practitioners of the art throughout the British Empire in one central authoritative institution. Study and research would be fostered, and the college would do everything to insure that the maternity service in every part of the empire was manned by those specially fitted for the work. At present the greatest need was opportunity for postgraduate clinical work. When this was satisfied it would become imperative for all holding official positions in maternity work to possess a diploma as a guarantee of efficiency, and this the college would offer.

Castellani Appointed Director of the Ross Institute

Sir Aldo Castellani has been appointed director of the Ross Institute, which post became vacant on the death of Sir Ronald Ross. Sir Aldo was born in Florence, Italy, fifty-seven years ago but has lived many years in England, where he made his name by research in tropical diseases, particularly in the discovery of the trypanosome of African sleeping sickness. In 1902 and 1903 he served on the Foreign Office and Royal Society commission for investigating sleeping sickness. During the war he was lieutenant colonel in the Italian army medical service. He recently founded the Rome School of Tropical Diseases and was given the Mussolini prize for his work.

Surgeons Too Old at Sixty

In the opinion of the Manchester Corporation Public Health Committee, surgeons are too old at 60. The committee has recommended that 60 be the retiring age for all future part time appointments to the medical and surgical consulting staffs of the municipal hospitals. Physicians on the committee support the view that men of 60 are not as capable of performing delicate operations as younger men. Many voluntary hospitals have made 60 the compulsory retiring age. It is said that there is a tendency for men to hang on too long.

Osteopathy an American Importation

Of irregular medical cults, the most fashionable in England is osteopathy. It is a recent American importation, which has established a "college" staffed by "professors" with a curriculum, at the end of which a diploma is obtainable. Armed with this, the osteopaths protest against "unqualified" practitioners of their cult and have made a strong attempt to obtain legal recognition by parliament. They received much support and more than a hundred members of parliament supported them at one time. In the period of the Labor government they seemed to have a fair prospect of success. But their hopes were crushed when that government was defeated. They were confronted with the objection that parliament could not recognize two orders of medical practitioners with different standards of education and were told that persons who desired to practice osteopathy could acquire the usual medical qualifications, which put no restraint on their practice. In his Maudsley lecture, delivered to the Royal Medico-Psychological Association on "Education in Medicine," Sir E. Farquhar Buzzard, professor of medicine in the University of Oxford, thought that osteopathy had seen its best years and would be forgotten in another ten years. The osteopath was just the bone setter of a previous generation, fortified by a smattering of anatomic knowledge and glorified by the ingenious theory that all diseases were the result of displaced bones pressing on organs or vessels. The osteopath would find a displaced bone, which must be accepted in faith, because it would not be appreciable to laymen or revealed by the most expert roentgen examination. The treatment was of course manipulation, which would cost so many dollars, paid preferably in advance. As an example of the methods of bone setters, Sir Farquhar vouched for the following case:

A well known cricket and football player was approaching the age when it was thought that he should follow less strenuous sports. He had a loose semilunar cartilage, for which he consulted a surgeon, who told him that he could be cured by operation but that the disability was so slight as hardly to justify this. Within a few days he made a century at cricket for his county. His friends persuaded him to go to the most fashionable bone setter of the day. He had his knee manipulated for $150, and within a day or two a paragraph appeared in a newespaper stating that he had been given up by a distinguished surgeon as incurable but had been operated on by the bone setter with such instantaneous success that he made the century for his country. He wrote to the paper stating that he made the century before the operation, but his letter was returned with the intimation that the adverisement and the correspondence columns had nothing to do with each other.

An Improvement in Roentgenographic Technic

At the British Institute of Radiology, Dr. N. S. Finzi, radiologist to St. Bartholomew's Hospital, described a new intensifying screen which allowed much more rapid x-ray exposure. It is made from refined zinc sulphate and has been named "fluorazure" on account of its intense azure blue fluorescence. The calcium tungstate screens in use have reduced the exposure time to about one tenth, but with fluorazure the period is reduced to a third or a fifth of that with tungstate. The details obtained with the fluorazure screen are just as good as with the best tungstate screen, and "graininess," which heretofore has prevented the adoption of zinc sulphide, is not apparent. For objects of unusual density, such as the chest, contrast is increased by the new screen, and it is in chest work that decrease in exposure time is most important. Good roentgenograms of the chest have been obtained at a distance of 6 feet with an exposure of one-fifteenth second, and an exposure of one one-hundredth second is only a matter of obtaining a suitable switch. Details of the portions of the lung surrounding the heart are much more distinct with the one-fifteenth second exposure. Direct cinematography of the chest may now be possible for x-ray work.

Reform in Training Nurses at Guy's Hospital

To relieve the strain on junior probationers, the governors of Guy's Hospital have instituted a scheme by which candidates receive in the preliminary school of the hospital an elementary course in anatomy, physiology, hygiene, invalid cookery and allied subjects, and a full course of lectures from teachers of the medical school in more advanced physiology and anatomy. This advanced course has heretofore been taken by probationers only after their entry into the wards as full time workers. The

advantage of the new arrangement is that the physical strain of the early months of training is greatly lessened. The governors have also sanctioned the creation of the nurses' representative council, a body elected by the nurses themselves and consisting of the matron and representatives chosen by each class of nurses in the hospital. The council may discuss any matter of hospital management in which the nurses are concerned, only questions of personal discipline being barred.

PARIS

(From Our Regular Correspondent)

Nov. 23, 1932.

Pigmented Spots, Heliotherapy and Eau de Cologne

Last summer the number of persons who took sun baths on the beaches increased. The warnings of physicians and articles published in the daily press vainly cautioned the public against the dangers associated with the practice, calling attention to the various forms of dermatitis, fever, nervousness and insomnia to which imprudent persons exposed themselves. In vain the pediatricians cited countless cases of latent tuberculosis in which a flare up occurred following immoderate applications of heliotherapy taken without the direction of a medical specialist. They pointed out further that many children, on returning from the beaches, bronzed to such an extent as to resemble young Negroes and presented with pride to admiring friends by their parents, had in reality become thin, anemic and nervous to a marked degree. No power on earth is capable of combating the infatuation inspired by a desire to keep up with the fashion. Research on the subject has emphasized a peculiar fact, well known, to be sure, but for which dermatologists have sought in vain for an explanation. That is the effect of applications of eau de cologne on persons who subject themselves beyond reason to sun baths. This concerns spots of melanoderma produced on almost any part of the skin but more particularly on the neck, thorax and shoulders. These spots, which are of a deep chestnut color, have an extremely variable morphology and course, resembling the irregular contour of geographic divisions, with rounded, oval, elongated or punctiform maculae. When the physician inquires, he learns that the patient applied eau de cologne to the region and then subjected himself to a prolonged sun bath. These spots persist for a long time and are resistant to all forms of treatment. No plausible explanation has as yet been found. It was supposed at first that the relative defatting of the skin by the alcohol had prepared the way for a more energetic action of the ultraviolet rays. But pure alcohol does not produce these results, and it will probably be necessary to incriminate some one of the essential oils that enter into the composition of eau de cologne. But when oil of bergamot was applied to the skin, with subsequent exposure to ultraviolet rays, to bring about a browning of the areas of the skin that were too white, as in vitiligo, no results were secured. Likewise the friction with which the eau de cologne had been applied was incriminated, but the same spots were observed after a simple atomizing of the skin, which was sufficient to produce spots exactly at the site of each droplet of the applied fluid. Another supposition is that the oils that figure in the composition of eau de cologne present a special radiosensitiveness, which they impart to the spots on the skin with which they come in contact. The conclusion in any event is that one should abstain from applying eau de cologne or any perfumed ointment containing oil of lavender or bergamot.

"Verdunization" for the Purification of Water Supplies

The term "verdunization" was created by an engineer to designate a method of sterilizing drinking water which he elaborated during the war. This method, which is based on the use of minimal quantities of chlorine and of potassium permanganate, made it possible, along with extensive use of antityphoid vaccination, to reduce almost to the vanishing point, during the last two years of the war, the number of cases of dysentery and typhoid occurring in the army. The method, which rendered such good service during the siege of Verdun, is now being introduced in many cities that cannot afford the expense of bringing in spring water. The water thus sterilized had formerly a slight taste of chlorine. The method has now been improved; the dosage, precisely measured, is applied automatically so that the water now no longer has any peculiar taste, and the public accepts it without any complaints. The city of Paris, the population of which is constantly increasing, and particularly that of its large suburbs, is compelled constantly to seek new sources of water supply. Paris and its immediate environs constitute 3,500,000 consumers, who require daily 1,500,000 cubic meters of drinking water. Paris has therefore adopted verdunization to convert into safe drinking water the waters of the Seine, the Marne and the Ourcq, which are collected in immense reservoirs, in which the chemical treatment is applied. These waters are then conducted into the distributing mains. In this manner, Paris and its suburbs are assured at all times of an adequate water supply. At present there are nine pumping stations, which supply 700,000 cubic meters of drinking water each day. During the past year, all the previous chemical procedures have been replaced by verdunization, which is more economical and gives better results. At the opening of the last pumping station, at Ivry, the ceremonies were presided over by the minister of public health and the president of the municipal council, who brought out in an address that, since the general adoption of verdunization, the number of cases of typhoid and paratyphoid fever had diminished in Paris, within six months, more than 50 per cent.

Increase in the Number of Physicians Murdered

Dr. Gille has published an article in which he says that the number of physicians murdered each year shows an increase. The cause appears to lie partly in the increased manifestations of moral imbalance in a society that is excited, and partly in the weakness of the courts, which are too ready to accept evidence of the murderer's lack of responsibility for his crime. The physicians most frequently attacked are the surgeons, the members of the pension boards, and the chief physicians of the psychopathic hospitals. To the first group belonged Professor Pozzi and Dr. Guinard, surgeon of the Hôtel-Dieu de Paris, who were killed by neuropaths on whom they operated for a slight lesion and who alleged that they had been irremediably mutilated by the surgeons without receiving any benefit. The former was killed in his office at home, and the latter in the courtyard of the hospital. Dr. Gille emphasized the danger that surgeons incur in yielding to the entreaties of neuropaths who urge them to operate for an insignificant lesion to which they ascribe all their sufferings. One must guard against the illusion that an operation will solve the question. On the contrary, the individual will return and continue to complain, and, when patience is exhausted and he is forcibly ejected from the office, he becomes an untiring persecutor and is liable to take "justice" into his own hands. Professor Delpach was killed, at Montpellier, by a young man whom he had treated and who accused him of having prevented his marriage by giving information in regard to his health, although it was well founded, as it appears. The second group of murderers includes the persons wounded and/or mutilated during military service or during the course of employment, the occasion for the attack being the fact that the physician either rejected or reduced considerably their claims. One finds among this group many psychopaths of the "avenger" type, ever ready to wreak vengeance on some one for fancied wrongs. There have been several examples of this kind in the countless number of applicants for pensions. These psychopaths attack more frequently the medicolegal experts than the judge and his associates.

But the largest number of physicians are murdered in the psychopathic hospitals. According to Dr. Gille, these attacks ought to be the easiest to prevent, because the physician is informed of the dangers that he incurs and because, in principle, the inmates should be the object of special surveillance. One is surprised sometimes to learn that an inmate of a psychopathic hospital had been able to get possession of a revolver; but sometimes the insane employ the most unexpected objects: a block of wood, a large stone or a bar of iron. Against such improvised weapons, protection is difficult. Then, again, it sometimes happens that a physician of a psychopathic hospital is killed in the city, by one of his former patients, who had been given his liberty too early, owing to the urgent demands of his family. Professor Dupré has published an excellent study on these psychopaths with a tendency to kill. Their tendency is of the same nature as that of workmen who kill their employer or the foreman, whom they accuse of having caused them to lose their employment. Dr. Vinchon, in turn, after examining the books in the libraries that patients are allowed to use, expressed surprise that one finds many works, reviews or journals in which excitation to murder and anarchistic suggestions, in the form of literature on social reform, are freely expressed. The physicians in psychopathic hospitals would do well to give greater attention to this source of wrong influence.

BERLIN

(From Our Regular Correspondent)

Nov. 28, 1932.

Catechins, Newly Discovered Substances in the Blood

The hormone theory has opened a new field of knowledge, which promises interesting developments. If the "hormones" are to be regarded as stimulating or exciting substances, then the "catechins," as the Frankfort biologist Prof. Ferdinand Blum said at a meeting of the Frankfort Medical Society, are their antagonists. The term "catechin" is derived from κατέχειν, which signifies "to keep within bounds." The catechins are not substances that accidentally influence the action of a hormone but rather active substances whose special province, as it were, is to prevent excessive effects of hormones or to modify their action. The catechins are present in the human organism. It is known that the blood contains an antithyroidal substance, and experimental and clinical observations on the treatment of exophthalmic goiter with the blood or blood serum of thyroidless animals date back some time, Möbius having possibly been the first investigator in this field. Blum conducted research on this antithyroidal substance and determined quantitatively its relation to the thyroid gland. In 1929, he isolated the antithyroidal component from the protein of the blood, with which it forms a loose combination, and obtained it as an independent substance. If this substance in normal blood comes in contact with thyroidal substance, it reduces the action of the latter in the tadpole. In experiments on basal metabolism, this now highly purified substance may completely paralyze the stimulative action of ingested iodine-protein derived from the thyroid gland. In rabbits, for example, it suppresses a 10 to 16 per cent increase in basal metabolism brought about by a thyroid preparation. The antithyroidal substance, which is always found in the blood stream in large quantities, serves thus as a watchman for the thyroid gland, or, in other words, it is a genuine "catechin." Professor Herzfeld, of the Berlin third Medizinische Universitäts-Poliklinik, obtained the same results, which he reported before the Berliner Medizinische Gesellschaft. He employed this antithyroidal substance in twenty patients with severe exophthalmic goiter. There followed promptly a subsidence of the symptoms, a lowering of the pulse, a retrogression of the staring eyes, and an increase in weight of from 5 to 15 Kg. These observations are of a preliminary nature, and the further progress of these therapeutic experiments will be awaited with interest.

On Moving into an Apartment That a Colleague Has Vacated

Not long ago, the following resolution was adopted by the Gross-Berliner Aerztebund: A physician is not justified in moving into an apartment vacated by a physician of the same specialty without first securing the consent of his colleague. During the discussion on this rule of conduct, it was emphasized that a physician would subject himself to a penalty at the hands of a council on medical ethics if he were to (1) offer a landlord a higher rent for an apartment occupied by a physician and thus induce the landlord to terminate the occupant's lease; (2) use any means of persuading the landlord to refuse to allow the departing colleague to put up a notice announcing his removal or to leave in place the physician's sign on which an announcement of the removal has been posted; (3) neglect, after taking possession of an apartment formerly occupied by a colleague, to give to the inquiring clients of the latter conscientious and exact information concerning his new place of residence, or (4) take advantage of his occupancy to attract to himself in any dishonest way the clients of the former occupant.

Two years ago, a similar resolution was adopted: It is not permissible for a physician to take possession of an apartment in a house in which a physician of the same specialty resides, without first securing the consent of this physician. Moreover, it is not permissible for a physician to enter into a contract with the landlord to the effect that the latter shall not rent an apartment to any other physician, for the practice of medicine, within an entire block. It cannot be objected to if such a contract is entered into for an area corresponding to the size of a normal Berlin apartment house, even though, by reason of a division or for other reasons, two distinct houses are involved. It is a sign of the time that it should be necessary to call attention to such elementary principles of medical ethics.

New Institute of Architectural Hygiene

In modern buildings, in large cities (in addition to the combating of noise) illumination and ventilation must be adapted to the demands of modern hygiene. It is therefore the task of the Institut für Bauhygiene, recently established at the polytechnicum in Berlin-Charlottenburg, to determine the biologic requirements of all buildings. The director of the new institute, Dr. Kurt Eisenberg, formerly assistant at the hygienic institute of the University of Berlin, is hoping, in collaboration with the department of architecture of the polytechnicum, to bring about laws that will guarantee the erection of truly hygienic dwellings and working rooms. The progress in buildings erected in recent years has been chiefly on the economic side. Man's relations to climate as it affects his dwelling and his dependence on the type of construction have received only superficial consideration, whereas in America, for example, there have been hygienic engineers for many years. For the present, the chief work of the institute, which comprises only six rooms, will be concerned with research (particularly from the bacteriologic point of view) on dust prevention, ventilation and soundproofing.

Traffic Accidents

The question of guilt or innocence in traffic accidents, while it appears to present solely legal aspects, is beginning to concern more and more the physician's field of activity, and not merely that of the medicolegal expert. It is interesting to note the opinions of experts such as the psychotechnician Professor Moede of the Berlin-Charlottenburg polytechnicum, and the German medicolegalist F. Leppmann. Moede calls attention to the fact that in the presence of danger persons often act instinctively. Analysis of an accident will often lead to an understanding of the circumstances. The feeling of fright is an important element. Accidents will decrease when driving licenses are no longer issued to unfit persons. Leppmann distinguishes three types of persons who cause accidents: the reckless, the inattentive and the incompetent. A large per-

centage of the reckless drivers are alcohol addicts. There is now a federal decree that prohibits, under penalty, any person, while under the influence of alcohol, from driving an automobile. What is now needed is such a regulation as is enforced in Denmark that, if any doubt exists as to the soberness of a driver, a medical examination can be ordered. There is no doubt that the expert opinion of the physician would be valuable in judging the circumstances of many traffic accidents. Furthermore, experience shows that, while it is doubtless true that many automobile accidents are ascribable to the increase of nervousness, many nervous persons, on the other hand, drive their cars safely, so that, under certain circumstances, automobiling may bring them the needed recreation.

JAPAN

(From Our Regular Correspondent)

Nov. 1, 1932.

A United Public Health Department

Mr. Adachi, the present leader of a political party, says in a popular magazine that he insists on a new department of public health in the cabinet. As he may be prime minister some day, his suggestion is of interest. At present the public health work of the government is divided into many sections, some belonging to the home office, others to the education department, and several to the agricultural offices. Uniting them into one organization is urgently needed. Mr. Adachi insists that future governments should pay more attention to the welfare of the people in general, preserving health and protecting property. One leading policy of his party is the promotion of sanitation, especially among the lower classes.

Eyesight Conservation Day

An eyesight conservation day was held all over the country, October 10, under the auspices of the central society for the Welfare of the Blind, with the aid of the home office and educational department. The trachoma prevention association, the ophthalmologic society, the school sanitary association, and all Japan women's clubs participated in the movement. In some places, free examinations were given by ophthalmologists. In all the primary and grade schools, eye examinations were made. In town and country, indigent blind men were treated free of charge, and some were given help so as to be able to receive medical treatment. Spectacle makers and dealers distributed pamphlets, exhibited motion pictures on the conservation of vision and delivered lectures.

Practitioners Surrounded by Clinics

In Tokyo, medical practitioners are at present surrounded by many special forms of clinics. The six largest daily newspapers, which enjoy a wide circulation the country over, have their own traveling clinics in the capital with a view to obtaining more subscribers. Some of them even have hospitals, and they are prosperous. Two of the largest department stores here have a dental clinic and an ophthalmic clinic. As the department stores are crowded, these clinics have a large number of patients every day. Three insurance companies have hospitals not only for policyholders but for the people at large. Government and municipal hospitals are numerous. The Red Cross has its hospitals and branch hospitals. The charity society of the Saiseikai has its clinics. The private railways do the same; also the police and the school teachers. The socialists are reported to be organizing a hospital. To almost all the medical colleges or universities there are attached their own clinics and hospitals. Surrounded by clinics, the practitioners are forced to look at a dark future. Strict regulations to govern the distribution of physicians and hospitals are matters of moment.

A Pension for a Scientist's Family

Compared with the surviving relatives of soldiers killed in battle, the families of scientific victims are treated coldly. The families of such men, it is reported, are sometimes turned adrift. Medical research workers are always exposed to infection with deadly disease, no matter how careful they may be. But the cry for protecting research workers has at last been heard. On the death of Professor Saibe of the Niigata Medical College, the Pension office for the first time has granted an allowance to his wife and daughter. As reported before, Dr. Saibe devoted his life of forty-one years to investigating the fatal tsutsugamushi disease, the cause of which is still unknown, and last July he died of this disease. Though he was a professor in the state college, his service had not yet amounted to fifteen years. He was quite indifferent to making money, and his family was left without resources after his sudden death. His wife was compelled to teach in the girls' school where she had taught before her marriage. The pension office, moved by the earnest appeal of members of the medical profession, decided to treat his death as that of soldiers, and has granted an allowance to his family. This example, though the pension is far from adequate, is a great encouragement to scientific research.

Conference on Tuberculosis Prevention

The tuberculosis prevention societies in many parts of the country held their second conference at Tokyo, October 18. More than 130 local societies were represented. Careful deliberation was carried on over forty-six important articles. The enlargement of the state asylums, the prohibition of building underground railways, and reporting names of patients to authorities were leading subjects of discussion. It was decided that a proposal should be made to the military and naval authorities about soldiers and sailors retired on account of tuberculosis. The number of those sent home in this way amounts to about 1,500 in the army and 400 in the navy, on an average. Every year almost 2,000 cases are distributed over the country to spread infection among healthy persons. In 1931 the military authorities had planned to send those patients to private or public asylums, but the lack of funds prevented it from being put into practice.

News from Manchuria

In Manchukuo, the newly established republic, a question of urgent necessity is the diffusion of sanitary knowledge among the natives. The people there are destitute of sanitary ideas, because the military caste, which ruled them so long, did not pay attention to the welfare of the people. There is no medical equipment except that of the South Manchuria Railway Company along its railroads. A young men's political party petitioned the government recently to provide medical treatment at government expense. A central hospital with branches in all localities is asked for, to be subsidized by the central and local goverments. Remote regions will be visited by a traveling clinic. For the supply of medicine and chemicals, a large government factory for manufacturing medicine, with branches all over the republic, is earnestly desired. As epidemics every year kill many inhabitants, the realization of these proposals is hoped for if financial conditions permit.

The Manchuria Medical School, which was discontinued three years ago, is going to reopen. The faculty is trying earnestly to obtain sanction on the ground that there will be an increase in Japanese immigrants, who will need medical care. It is expected that the spring will see the reopening of the school, with a large hospital attached to it, in the capital.

The present system of sanitary work is almost the same as that of Japan. The central sanitary bureau is divided into administrative, endemiologic, veterinary and public health sections. Important offices in those sections are occupied both by Manchurian and by Japanese officials. The prevention of epidemics is chiefly in the hands of Japanese army surgeons. The natives at large, most of whom are said to have received medical treatment for the first time, are grateful.

Marriages

HARVARD R. HICKS, Doylestown, Pa., to Miss Edna R. Baughman of New Bethlehem, Sept. 28, 1932.

JOSHUA MONTGOMERY DEAVER to Miss Priscilla Sparks Sailer, both of Philadelphia, Dec. 16, 1932.

BENJAMIN SHERMAN, Bridgeport, Conn., to Miss Natalie Schulman of Morristown, N. J., recently.

STANLEY MOHR MOYER, Quakertown, Pa., to Miss Dorothy P. Fairchild of Glenside, Sept. 9, 1932.

NORMAN OLIVER BENSON to Miss Lily Snead Varser, both of Lumberton, N. C., Nov. 19, 1932.

FRANCIS P. DORSEY, JR., Hartington, Neb., to Miss La Verne Tathews of Yankton, Nov. 5, 1932.

HENRY GRADY COOK, Hattiesburg, Miss., to Miss Charlotte C. Lewis of Laurel, Nov. 17, 1932.

PAUL R. LEBERMAN to Miss Estelle Rosenthal, both of Philadelphia, Sept. 1, 1932.

FRANK W. NICKEL to Mrs. Helen Artis Davis, both of Peoria, Ill., Dec. 3, 1932.

JAMES A. TAYLOR to Miss Belle Whitman, both of Montpelier, Ind., Oct. 21, 1932.

Deaths

James Warren Van Derslice ⊕ Oak Park, Ill.; Rush Medical College, 1893; died, in the West Suburban Hospital, of general infection following influenza, Dec. 24, 1932, aged 63. Dr. Van Derslice was a member of the faculty of Rush Medical College in the department of pediatrics, 1893-1916; professor of pediatrics in the Illinois Post-Graduate Medical School, 1912-1918. During the war he served as captain in the Medical Corps. He was honorary president of the Sixth International Medical Congress in Budapest in 1909, and in 1920 President of the American Association of Medical Milk Commissions. Dr. Van Derslice served as President of the Chicago Medical Society and of the Illinois State Medical Association, and was a member of the House of Delegates of the American Medical Association, 1921-1930, and again in the session of 1932. As a physician and as one active in medical organization his life was rich in friendships.

William Henry Magie, Duluth, Minn.; St. Louis College of Physicians and Surgeons, 1884; an affiliate Fellow of the American Medical Association; member of the House of Delegates of the American Medical Association, 1917, 1920 and 1922; member of the Western Surgical Association; fellow of the American College of Surgeons; past president of the Minnesota State Medical Association and St. Louis County Medical Society; for many years on the staff of St. Mary's Hospital; aged 78; died, Dec. 11, 1932, of myocarditis and angina pectoris.

John Gerald Murphy, Wilmington, N. C.; University of Louisville (Ky.) School of Medicine, 1903; member and past president of the Medical Society of the State of North Carolina; past president of the North Carolina State Board of Medical Examiners; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the James Walker Memorial Hospital; member of the board of trustees of the University of North Carolina; aged 60; died, Dec. 18, 1932, of pneumonia.

Thomas Folwell Cole ⊕ Romulus, N. Y.; Albany Medical College, Albany, 1904; past president of the Seneca County Medical Society; for many years county coroner; aged 56; on the staffs of the Geneva (N. Y.) General Hospital and the Seneca Falls (N. Y.) Hospital, where he died, Dec. 13, 1932, of heart disease.

James Fred Theodore Jenkins, Los Angeles; University of Louisville (Ky.) School of Medicine, 1878; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1879; member of the California Medical Association; aged 78; died, Nov. 18, 1932, of chronic interstitial nephritis.

John Victor Keogh ⊕ Dubuque, Iowa; University of Pennsylvania School of Medicine, Philadelphia, 1899; member of the Associated Anesthetists of the United States and Canada; served during the World War; on the staff of St. Joseph's Mercy Hospital; aged 58; died, Dec. 2, 1932.

Ernest Rayburn MacDonald, Mount Carmel, Pa.; Atlantic Medical College, Baltimore, 1908; member of the Medical Society of the State of Pennsylvania; aged 52; died, Nov. 26, 1932, in the Shamokin State (Pa.) Hospital, of peritonitis, following an operation for appendicitis.

Edwin Eugene Wallace, Bath, N. Y.; University of the City of New York Medical Department, 1879; formerly county coroner, health officer of Jasper and member of the school board; aged 80; died, Oct. 29, 1932, of carcinoma of the stomach and cerebral thrombosis.

Thomas P. McLendon, Corsicana, Texas; Baylor University College of Medicine, Dallas, 1909; member of the State Medical Association of Texas; served during the World War; president of the Physicians' and Surgeons' Hospital board; aged 44; died, Nov. 27, 1932.

James Thomas Lawless, Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1872; Civil War veteran; for many years member of the city board of health; on the staff of St. Vincent's Hospital; aged 88; died, Nov. 30, 1932, of chronic myocarditis.

John Hack Ayres, Accomac, Va.; University of Maryland School of Medicine, Baltimore, 1888; member of the Medical Society of Virginia; formerly member of the state board of medical examiners; aged 67; died, Dec. 8, 1932, of cerebral arteriosclerosis.

John Sherman Fowler, Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1931; member of the Medical and Chirurgical Faculty of Maryland; aged 26; intern, Union Memorial Hospital, where he died, Dec. 8, 1932, of paratyphoid fever.

Horatio Gates Gibson, Douglaston, N. Y.; Columbian University Medical Department, Washington, D. C., 1891; member of the Medical Society of the State of New York, and the American Psychiatric Association; aged 67; died, Dec. 13, 1932.

John William Rand, Amesbury, Mass.; University of Michigan Medical School, Ann Arbor, 1885; member of the Massachusetts Medical Society; aged 79; on the staff of the Amesbury Hospital, where he died, Dec. 4, 1932, of pneumonia.

Joseph Stone Lyon ⊕ Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1914; member of the Associated Anesthetists of the United States and Canada; aged 51; was found dead in bed, Nov. 29, 1932, of heart disease.

Frank Webster Heilman, Kittanning, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1902; member of the Medical Society of the State of Pennsylvania; aged 53; was found dead in bed, Dec. 3, 1932, of heart disease.

Darwin MacLean Crawford, Mifflintown, Pa.; University of the City of New York Medical Department, 1886; member of the Medical Society of the State of Pennsylvania; aged 68; died, Dec. 1, 1932, of malignant disease of the throat.

Robert W. Brady, Honesdale, Pa.; Albany (N. Y.) Medical College, 1863; Civil War veteran; formerly school director, councilman, and president of the board of health at Honesdale; aged 90; died, Nov. 6, 1932, of cerebral hemorrhage.

Herman Sugarman ⊕ Los Angeles; Creighton University School of Medicine, Omaha, 1910; on the staffs of the Cedars of Lebanon Hospital and the Santa Fe Coast Lines Hospital; aged 44; died, Nov. 24, 1932, of pneumonia.

Toxey Hannon Sewell ⊕ Tarrant, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1923; served during the World War; aged 39; died, Dec. 5, 1932; in a hospital at Birmingham, of encephalitis.

William Nathaniel Hylton, Gresham, Neb.; University of Nebraska College of Medicine, Lincoln, 1886; formerly bank president, member of the school board and city council; aged 70; died, Nov. 3, 1932, at Elmwood.

Lawrence Edward Rectenwald, Pittsburgh; University of Louisville (Ky.) School of Medicine, 1908; member of the Medical Society of the State of Pennsylvania; aged 52; died, Nov. 14, 1932, of heart disease.

Thomas Jefferson Dunn, Dieterich, Ill.; Rush Medical College, Chicago, 1881; member of the Illinois State Medical Society; Civil War veteran; aged 86; died, Nov. 25, 1932, of chronic myocarditis.

Charles Harvey Finch, Providence, R. I.; University of the City of New York Medical Department, 1880; formerly a medical missionary; aged 80; died suddenly, Nov. 30, 1932, of heart disease.

Eugene Bourgeois, Brusly, La.; Tulane University of Louisiana School of Medcine, 1891; aged 66; died, Nov. 17, 1932, of hemorrhage of the stomach and probable gastric ulcer.

Warren Lincoln Johnson ✠ Boston; Harvard University Medical School, Boston, 1924; aged 36; died, Nov. 27, 1932, in the Faulkner Hospital, of acute otitis media and mastoiditis.

Edwin Scott, Toledo, Ohio; Eclectic Medical Institute, Cincinnati, 1884; member of the Ohio State Medical Association; aged 72; died, Nov. 28, 1932, of coronary sclerosis.

Merritt B. Schultz ✠ Johnstown, Pa.; Columbus Medical College, 1892; formerly on the staff of the Johnstown City Hospital; aged 64; died, Oct. 26, 1932, of diabetes mellitus.

R. W. Woods, Jasper, Ala.; Louisville (Ky.) Medical College, 1881; formerly a member of the state legislature; aged 77; died, Nov. 9, 1932, of chronic prostatitis and myocarditis.

Andrew Vincent Rock, Mobridge, S. D.; John A. Creighton Medical College, Omaha, 1906; mayor of Mobridge; aged 54; died suddenly, Dec. 16, 1932, of heart disease.

Robert Delmar Nicholls ✠ Farrell, Pa.; Jefferson Medical College of Philadelphia, 1899; aged 60; died, Dec. 4, 1932, in the Buhl Hospital, Sharon, of influenza and pneumonia.

Alfred Charles Hanton ✠ Oil City, Pa.; New York Homeopathic Medical College and Flower Hospital, New York, 1910; aged 47; died Dec. 2, 1932, of acute nephritis.

Herbert Joseph Strub, St. Louis; St. Louis University School of Medicine, 1919; aged 39; died, Dec. 2, 1932, in the Alexian Brothers' Hospital, of heart disease.

Benjamin Robert Benson, Sr. ✠ Cockeysville, Md.; University of Maryland School of Medicine, Baltimore, 1873; aged 78; died, Dec. 2, 1932, of heart disease.

Harold Philip Martin, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1899; M.R.C.S., England, L.R.C.P., London, 1905; aged 55; died, Oct. 4, 1932.

Samuel Oliver Stockslager, Syracuse, N. Y.; Bellevue Hospital Medical College, New York, 1875; aged 82; died suddenly, Nov. 3, 1932, of heart disease.

John Emerson Bennett, Starrucca, Pa.; Medico-Chirurgical College of Philadelphia, 1905; aged 62, died, Nov. 28, 1932, of septicemia, as the result of a carbuncle.

Eugene LeBaron ✠ Brawley, Calif.; University of Maryland School of Medicine, Baltimore, 1892; aged 67; was found dead, Nov. 28, 1932, of heart disease.

Charles Augustus Crosby, Leeds, S. C.; Louisville (Ky.) Medical College, 1892; aged 63; died, Dec. 5, 1932, in the Pryor Hospital, Chester, of heart disease.

Franklin Abram Dodge ✠ LeSueur, Minn.; University of the City of New York Medical Department, 1886; aged 70; died, Dec. 6, 1932, of lobar pneumonia.

J. H. Goodwin, Angola, Ind.; Starling Medical College, Columbus, 1887; formerly bank president; aged 71; died, Nov. 26, 1932, of cerebral hemorrhage.

Orville M. Blood, Los Angeles; Bennett College of Eclectic Medicine and Surgery, Chicago, 1888; aged 70; died, Nov. 9, 1932, of coronary thrombosis.

Thomas Davidson, Los Angeles; University of Glasgow Medical Faculty, Glasgow, Scotland, 1880; aged 75; died, Nov. 28, 1932, of heart disease.

James A. Jeffries, Philadelphia; Medical College of Ohio, Cincinnati, 1877; formerly a druggist; aged 82; died, Nov. 19, 1932, of myocarditis.

James Weir Robinson, Philadelphia; Jefferson Medical College of Philadelphia, 1889; aged 64; died, Nov. 13, 1932, of arthritis deformans.

Hugh Robert Garrett, Zanesville, Ohio; Ohio Medical University, Columbus, 1902; aged 71; died, Nov. 27, 1932, in the Bethesda Hospital.

Wallace Jason Collins, Westfield, Mass.; Medical School of Maine, Portland, 1886; aged 72; died suddenly, Nov. 23, 1932, of angina pectoris.

Carson James Kendall, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1916; aged 40; died, Oct. 19, 1932.

Arthur Manford Bell, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1906; aged 57; died, Sept. 10, 1932.

John Kingsley Carson, Los Angeles; Missouri Medical College, St. Louis, 1883; aged 79; died, Nov. 27, 1932, of pernicious anemia.

Francis Front, Chicago; University of Krakow, Austria, 1894; aged 65; died, Dec. 7, 1932, in Daytona Beach, Fla.

James H. Williams, Jackson, Miss.; Kentucky School of Medicine, Louisville, 1893; aged 64; died, Oct. 11, 1932.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The Food and Drug Administration of the U. S. Department of Agriculture publishes, in bulletins issued at frequent intervals, reports on "patent medicines" whose sale has been found to violate the national Food and Drugs Act. Unfortunately, this information is buried, so far as the general public is concerned. For that reason, THE JOURNAL has always published abstracts of these notices and, later, reprinted the material in book and pamphlet form, for the information of the profession and the public. The following items present such abstracts in the briefest possible form. First is given the name of the product with the name of the manufacturer, shipper or consigner; following this is the composition, as shown by the analyses made by the federal chemists; then comes a brief statement of the type of "patent medicine," unless the name of the product is self-explanatory; finally, there is given the reason for the charge of misbranding: Fraudulent therapeutic claims or false claims for composition or origin. It is to be borne in mind that the dates of issuance of the Notices of Judgment here abstracted may be several months later than the date of seizure of the product.]

Goldban's Celebrated 449 Remedy.—Hance Bros. and White, Inc., Philadelphia. Composition: Potassium nitrate, methenamine, uva ursi, alcohol and water. For kidney and bladder disorders, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 17753: June, 1931.*]

Iroquois Famous Indian Herb Tea.—Iroquois Famous Indian Remedies Co., Inc., New York City. Composition: Coriander, fennel, celery, senna, buchu, chamomile, sassafras and triticum. Cure-all. Fraudulent therapeutic claims.—[*N. J. 17754; June, 1931.*]

Soak-In Liniment.—Morgan and Sampson, San Francisco. Composition: Chiefly oils, including methyl salicylate (49 per cent), and peppermint. Fraudulent therapeutic claims.—[*N. J. 17756; June, 1931.*]

Novak's Kidney Pills and Komet.—John Novak Co., Chicago. Composition: Pills, methylene blue and cubeb oleoresin; Komet, an ointment essentially of petrolatum and wax, small amounts of camphor, menthol, methyl salicylate, and turpentine oil. Pills for kidney, bladder, rheumatism and dropsy cure, and Komet for rheumatism, sciatica and influenza cure. Fraudulent therapeutic claims.—[*N. J. 17757; June, 1931.*]

Bel-Rub.—W. E. Shuit, Inc., Passaic, N. J. Composition: An ointment with a petrolatum base containing methyl salicylate, camphor and menthol. Fraudulent therapeutic claims.—[*N. J. 17759; June, 1931.*]

Davis' Union Tonic.—Charles T. Davis, Pensacola, Fla. Composition: Epsom salt with extracts of plant drugs, including licorice, a laxative, a bitter, salicylic acid and water. Cure-all. Fraudulent therapeutic claims.—[*N. J. 17764; June, 1931.*]

Myer's (Dr.) Pneumonia Compound.—Myers Remedy Co., Philippi, W. Va. Composition: Sodium salicylate, extracts of plant drugs, sugar, alcohol and water. Fraudulent therapeutic claims.—[*N. J. 17766; June, 1931.*]

Diatussin.—Ernst Bischoff Co., Inc., New York City. Composition: Extracts of plant drugs including thyme, with alcohol and water. For whooping cough, etc. Fraudulent therapeutic claims.—[*N. J. 17767; June, 1931.*]

Histosan Syrup.—Ernst Bischoff Co., Inc., New York City. Composition: Guaiacol, protein matter, sulphates, sugar and water. For bronchitis, pneumonia, etc. Fraudulent therapeutic claims.—[*N. J. 17768; June, 1931.*]

Metro-Oil.—Metro-Oil Co., St. Louis. Composition: Mineral oil, volatile oils including rose oil, and a small amount of pyridine. For sinus infections, bronchial asthma, and hay fever. Fraudulent therapeutic claims.—[*N. J. 17770; June, 1931.*]

Wampole's Vaginal Cones Boroglyceride Compound With Ichthyol.—Henry K. Wampole and Co., Philadelphia. Composition: Boric acid, borax, zinc and sulphonated compounds, gelatin and glycerin. Fraudulent therapeutic claims.—[*N. J. 17774; June, 1931.*]

Bee Brand Laxative Quinine Tablets.—McCormick and Co., Baltimore. Composition: Acetanilid (1.9 grains per tablet), cinchonin, caffeine, podophyllum resin and a trace of quinine. For coughs, lagrippe, bronchitis, catarrh. Fraudulent therapeutic claims.—[*N. J. 17775; June, 1931.*]

Ferrosanol.—Hæmozon Products Co., West Bend, Wis. Composition: Common salt, hydrochloric acid, iron (ferrous and ferric) salts and water. Cure-all. Fraudulent therapeutic claims.—[*N. J. 17776; June, 1931.*]

K P N Nutrition No. 50 and K P N Nutrition No. 75-25.—Perfect Nutrition Co., Inc., San Francisco. Composition: No. 50, essentially a mixture of alfalfa, beets, parsley, and seaweed; No. 75-25, essentially a

mixture of beets and kale. No. 50 for kidney disorders and diabetes; No. 75-25 for prostate glands and bladder. Fraudulent therapeutic claims. —[*N. J. 17777; June, 1931.*]

B 5000.—Robert P. Gust Co., Inc., Los Angeles. Composition: Extracts of plant drugs including a laxative drug, trace of alkaloids, resins, aloin, alcohol and flavored water. For female troubles. Fraudulent therapeutic claims.—[*N. J. 17778; June, 1931.*]

Eucaline Tonic Compound.—Eucaline Medicine Co., Dallas, Texas. Composition: Cinchona hydrochloride, iron chloride, a laxative plant drug, sugar, alcohol and water; the "tasteless" form had essentially the same composition, with the addition of acetanilid. For malaria, chills, fever, lagrippe. Fraudulent therapeutic claims.—[*N. J. 17779; June, 1931.*]

Mygrone.—John Wyeth and Bro., Inc., Philadelphia. Composition: Amidopyrin and fillers. For migraine, acute fever, asthma, rheumatism, influenza, hay fever and neuralgia. Fraudulent therapeutic claims.—[*N. J. 17780; June, 1931.*]

Boracetine.—F. E. Barr and Co., Chicago. Composition: Baking soda, sodium borate, potassium chlorate, thymol, menthol, eucalyptol and cassia oil, alcohol and water. Alleged antiseptic. Fraudulent therapeutic claims. —[*N. J. 17782; June, 1931.*]

Romineck's Diuretic Pills.—Hance Bros. and White, Inc., Philadelphia. Composition: Extracts of plant drugs including licorice, bearberry, buchu and juniper oil. For bladder diseases. Fraudulent therapeutic claims.—[*N. J. 17784; June, 1931.*]

Monroe's Formula No. 7.—Dow Drug Co., Pittsburgh. Composition: Essentially iron and ammonium citrate, sodium benzoate, potassium iodide, very small amounts of hydrastis, with glycerin and water. For liver, kidney and blood disorders, stomach ulcers. Fraudulent therapeutic claims. —[*N. J. 17785; June, 1931.*]

Kavatone.—Gray's Medicine Co., South Bend, Ind. Composition: Potassium iodide, a laxative drug, sassafras oil and methyl salicylate; isopropyl alcohol, glycerin and water. For rheumatism, stomach, liver and blood disorders. Fraudulent therapeutic claims.—[*N. J. 17786; June, 1931.*]

Blue's (Dr.) Kidney and Bladder Remedy and Dr. Blue's Wonderful Blood Purifier.—James T. Blue Chemical Co., Washington, D. C. Composition: Kidney and Bladder Remedy was essentially methenamine, potassium acetate, buchu, sugar, alcohol and flavored water; Blood Purifier was essentially epsom salt, potassium iodide, sodium salicylate, and sassafras, with water and vanilla flavoring. Fraudulent therapeutic claims.—[*N. J. 17789; June, 1931.*]

Beach's Gen-Sen Tonic.—Beach's Wonder Remedy Co., Columbia, S. C. Composition: Essentially baking soda, common salt, saccharin, volatile oil including cassia, menthol and methyl salicylate, alcohol, water and a trace of borax. Cure-all. Fraudulent therapeutic claims.—[*N. J. 17790; June, 1931.*]

Oxien Nazone Salve.—Great Oxie Co., Augusta, Me. Composition: Ointment with a petrolatum base, sassafras oil, camphor oil, methyl salicylate, and traces of carbolic acid and menthol. For catarrh, eczema, coughs, chilblains, erysipelas, earache, influenza, etc. Fraudulent therapeutic claims.—[*N. J. 17792; June, 1931.*]

T. M. C. Laxative Cold Tablets.—Frederick Stearns and Co., Detroit. Composition: acetanilid, cinchonine salicylate, podophyllum and camphor. Fraudulent therapeutic claims.—[*N. J. 17793; June, 1931.*]

C. P. R. Tablets.—P. McConnell Co., Los Angeles. Composition: Aspirin, acetphenetidin, a laxative drug, and red pepper. For earache, neuritis, neuralgia, rheumatism, grippe and influenza. Fraudulent therapeutic claims.—[*N. J. 17795; June, 1931.*]

Standard Cough and Cold Compound.—Standard Remedy Co., Inc., Washington, D. C. Composition: Essentially, tar, menthol, extracts of plant drugs including wild cherry; salicylic acid, sulphuric acid, glycerin, sugar and water. Fraudulent therapeutic claims.—[*N. J. 17797; June, 1931.*]

Standard System Tonic.—Standard Remedy Co., Washington, D. C. Composition: Epsom salt, salicylic acid, saccharin, licorice, sassafras, wild cherry and water. Fraudulent therapeutic claims.—[*N. J. 17797; June, 1931.*]

Welch's Aegopodium.—W. C. Welch, White Plains, N. Y. Composition: Potassium iodide, colchicine, alcohol and water. For rheumatism, lumbago and gout. Fraudulent therapeutic claims.—[*N. J. 17799; June, 1931.*]

Adropsedema.—Van Seaton Chemical Co., Ft. Worth, Texas. Composition: Metallic iron, scoparius and gelsemium. For dropsy and heart disorders. Fraudulent therapeutic claims.—[*N. J. 17800; June, 1931.*]

Leonardi's Elixir.—S. B. Leonardi & Co., Inc., New York City. Composition: Potassium iodide, extracts of plant drugs, small quantity of an iron compound, alcohol, sugar and water. For blood disorders, syphilis, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 17828; June, 1931.*]

Chewalla.—Chewalla Co., New Orleans. Composition: Potassium iodide, acetic acid, a laxative drug, alcohol and flavored water. For rheumatism. Fraudulent therapeutic claims.—[*N. J. 17829; June, 1931.*]

Four-Forty Four (4-44).—W. B. Nethery, Elberton, Ga. Composition: Epsom salt, compounds of ammonium, sodium, potassium and phosphorus, small quantities of saccharin and salicylic acid, traces of calcium, iodine and manganese, sugar and water, flavored and colored. For blood disorders, rheumatism and influenza. Fraudulent therapeutic claims.—[*N. J. 17830; June, 1931.*]

Correspondence

METHYLENE BLUE AS ANTIDOTE FOR CYANIDE AND CARBON MONOXIDE POISONING

To the Editor:—I have just seen in THE JOURNAL, Dec. 3, 1932, page 1944, an article written by Dr. J. C. Geiger in which he mentioned several case histories of cyanide poisoning with and without the use of methylene blue (methylthionine chloride, U. S. P.).

The action of methylene blue on cyanide and carbon monoxide has been known a long time in theoretical biology, but I was first to suggest that it be used as an antidote for cyanide and carbon monoxide poison cases, as a result of some studies which I made on animals under a grant from the medical school here, and as a result of extensive reading which I have done.

At a meeting of the Society for Experimental Biology and Medicine, which took place last April, Dr. Hanzlik heard my paper on the use of methylene blue as an antidote for cyanide and carbon monoxide poisoning. It was therefore not as a result of any "survey" on the part of Dr. Hanzlik as intimated by Dr. Geiger that methylene blue was given as a treatment in the first emergency case, but merely because Dr. Hanzlik had been present at this meeting and had heard my paper.

Last night another cyanide victim was successfully treated by the methylene blue method.

MATILDA MOLDENHAUER BROOKS, PH.D.,
University of California, Berkeley, Calif.

To the Editor:—In the cyanide article which appeared in THE JOURNAL, Dec. 3, 1932, it has been suggested that we did not give sufficient credit to the work of Matilda M. Brooks of the University of California, although her work was mentioned in the references. Therefore, I would appreciate your publishing this letter. I have a high regard for the author and the type of work that has been done.

Furthermore, the statement was made by Dr. Brooks in the article in the *Proceedings of the Society of Experimental Biology and Medicine* (**29**:1228 [June] 1932) that from the experimental work methylene blue could be applied as an antidote of poisoning of human beings from cyanide ("It is suggested that methylene blue injections could be used advantageously in cases of HCN or CO poisoning").

J. C. GEIGER, M.D., San Francisco.
Director of Public Health.

TESTIMONIALS FOR YEAST

To the Editor:—It has been brought to the attention of the Vienna Medical Faculty that medical testimonials favoring one of the yeast preparations placed on the market by the Fleischmann Yeast Company in New York have been placed at the disposal of this company by certain members of the medical faculty in Vienna, and that these testimonials are spread and misused for advertising purposes in American illustrated and other magazines in quack-fashion. Even though the testifiers in question cannot personally be responsible for this misuse, since they have no power of might against the unfair methods employed by the yeast firm, nevertheless the Vienna Medical Faculty instituted an extensive inquiry into this matter in June, 1932. The members at fault were officially sharply reproved by the dean, and all members of the faculty were forbidden to give any testimonials intended for advertising purposes in the future.

All of the 328 members of the medical faculty were officially advised of these proceedings. Incidentally, not a single member of the Board of Professors (heads of departments) of the medical faculty is involved in this affair. Seven privatdozents not

included on the board, and not one of whom either has the official position of teacher or is in charge of a department, are concerned here. (Privatdozents, according to the statutes of the universities of Austria, are not appointed by the state but merely permitted by the state to teach.)

In consideration of the fact that through the impropriety of these advertisements the reputation and esteem of the Vienna Medical School could be seriously affected among the medical men and people of America, we ask the American Medical Association to take cognizance of the foregoing explanation of the situation and to spread this information among its members through its publishing organ, and if possible also publicly.

PROF. DR. ERNST PICK,
Dean of the Medical Faculty and Director of the Pharmacologic Department.
PROF. DR. ROLAND GRASSBERGER,
Former Dean of the Medical Faculty and Director of the Hygienic Department.
Vienna, Austria.

CORRECTION OF INTERVIEW BY DR. BETHEL SOLOMONS

To the Editor:—I have lately returned from a tour in Canada and the United States of America, where I had the honor of addressing the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and other learned societies.

I was tremendously impressed with your hospitals and with the amount of scientific and practical work which is being carried out. I have brought back with me many ideas which I hope to get started here.

Unfortunately, in an interview, a member of the lay press got an entirely wrong idea of what I intended to convey. I did not bother to contradict this, until it was published in the British medical press and now in your valuable journal.

What I meant to convey was that I admired your beautiful buildings. I stated that I also admired the great amount of research carried on in the institutions, but that it was possible to carry on work in a proper manner in very ancient buildings —such as we have to do in Ireland. I wish indeed that we had more funds to modernize our own hospitals.

I know that I can reckon many of the Canadian and American obstetricians and gynecologists among my best friends, and I feel that I should explain this misrepresented interview.

I have never in my life experienced such hospitality, courtesy and zeal in the endeavors which were made to let me see all the wonderful work which has been done in your country.

BETHEL SOLOMONS,
Master-Rotunda Hospital, Dublin.

LABEL BORIC ACID SOLUTIONS POISON

To the Editor:—The recent deaths of three infants by the accidental use of boric acid in a New York Hospital recalls six similar accidents in a Chicago hospital in 1927 (McNally, W. D., and Rust, C. A.: The Distribution of Boric Acid in Human Organs in Six Deaths Due to Boric Acid Poisoning, THE JOURNAL, Feb. 4, 1928, p. 382). All these accidents occurred as the result of administering a solution of boric acid for water or saline solutions. The use of boric acid and its salts in the medical profession and in some of the economic lay industries has made them commonplace—so much so, in fact, that their power for harm through overdosage or accidental consumption has receded to the background until ordinary precaution, at times, is not used in administering these substances. The potential danger of boric acid poisoning is sufficiently great to make it imperative that all containers of solutions of boric acid in hospitals be distinctly labeled POISON, so that there will not be a repetition of this type of poisoning.

WILLIAM D. MCNALLY, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TELESCOPIC LENSES

To the Editor:—Can you give me information with regard to the telescopic lenses originated by William Feinbloom and advertised widely for the benefit of the American Academy of Optometry? If they are what I think they are, it seems to be an extremely cruel method of advertisement.

FRANK E. WILSON, M.D., New London, Conn.

To the Editor:—Considerable publicity over the radio and newspaper has been given here to an alleged discovery by Mr. Feinbloom of Brooklyn. It has aroused the interest of many people with severely impaired sight and the local oculists are getting many inquiries regarding these new lenses. I have been using the Zeiss telescopic lenses, which also include cylindric correction when necessary, for a considerable period of time and have found them of value in a limited number of cases. I am unable to see how the approximation of objects which accompanies the magnification secured by these glasses can be overcome in the manner described in the newspaper article or in any other manner and I should like to know whether there is any truth in this whole matter. It is of great interest to all ophthalmologists and I have been wondering whether your organization would investigate the authenticity of the claim or would give me any suggestion as to the best way in which I can find out more about this.

LOUIS KAZDAN, M.D., Toronto.

To the Editor:—I would appreciate your opinion on "Telescopic Vision," as the article appeared in the Chicago *Tribune*, Dec. 23, 1932.

C. K. HAHN, M.D., Racine, Wis.

ANSWER.—The ophthalmologic world is being deluged with questions emanating from the publicity for William Feinbloom, optometrist, of New York, in respect to his so-called new telescopic spectacles.

So far the only information available is that obtained from the daily press, from which it would appear that Mr. Feinbloom has added a cylinder to the well known Zeiss telescopic spectacles. From a purely theoretical optical standpoint it is incomprehensible as to what difference such an addition would make, except so far as a cylinder will correct whatever astigmatic error may be in the individual patient's eye. That is nothing new, for cylinders have been incorporated in the Zeiss telescopic spectacles whenever an astigmatic error was present.

Of course, owing to the limitation of the use of mydriatics by optometrists, it is perfectly understandable that they have never been able to estimate accurately the full refractive error and consequently have never been able to fit telescopic spectacles accurately.

Telescopic spectacles and magnifiers are of enormous value, but in a limited number of patients. Cases of central retinochoroiditis, of semialbinotic failure of macular differentiation, of arrested optic atrophy of a low degree, and so on, may be benefited by telescopic spectacles, provided the damage was not too extensive. In a series of about 1,800 patients who were thought clinically suitable for telescopic spectacles, it was found that real improvement in vision could be effected in about 10 per cent. But less than one third of the 10 per cent were able to utilize the spectacles. It is difficult for patients to accustom themselves to telescopic spectacles because of the limited visual field and because of the limited range of distances of clear vision.

In view of these facts, strenuous protests should be made against the wide publicity given Feinbloom and his so-called improvement. The cylinder addition, on which he bases his claims, has not been proved to yield better results than the standard telescopic spectacles. But whether an improvement is present or not, the fact remains that the number of cases in which they are applicable is limited, and the extravagant claims aired in the press cruelly arouse false hopes in the breasts of a host of unfortunates.

MENSTRUATION DURING PREGNANCY

To the Editor:—Would there be any condition aside from a placenta praevia that would cause menses during pregnancy? My patient, a woman of 26, with all characteristic indications of a three months pregnancy, has had menstrual periods for the past two months and is quite alarmed. Is this phenomenon rare? I cannot seem to find any literature on this type of case. Please omit name and address.

M.D., New York.

ANSWER.—Placenta praevia does not produce menses during pregnancy. The term menses implies more or less regular monthly periods of bleeding, and in the blood passed it should be possible to find pieces of uterine endometrium. Placenta praevia produces bleeding during gestation, but these hemorrhages are nearly always irregular in time and amount and

they do not contain uterine endometrium. Sooner or later they are followed by uterine contractions and emptying of the uterus. True menstruation occasionally occurs during pregnancy, but the amount is less than usual and the bleedings rarely occur after the fifth month except in the case of a double uterus. In this condition, if ovulation takes place during pregnancy and perhaps also when ovulation is absent, it is possible for the monthly flow to occur from the nonpregnant horn of the double uterus. In some rare cases monthly bleeding takes place throughout the entire pregnancy. In any event it is difficult to be certain that the periodic hemorrhages represent true menses; hence all patients who bleed during pregnancy, especially those who have normal uteri, should be treated as patients who are having a threatened miscarriage. Likewise it is important to seek the cause of the recurrent bleeding. Of course it is important to be sure that the patient is pregnant. The enlarged uterus may be due to some other condition, such as fibroids.

VERNAL CONJUNCTIVITIS

To the Editor:—Will you please give me the latest conception of vernal conjunctivitis? I would appreciate its discussion with reference to allergy and hay fever, and also the best methods of treatment. Is there any specific pollen extract treatment? I am referring particularly to the seasonal recurring type in children. References will be appreciated. Please do not publish name or address.

M.D., New Jersey.

ANSWER.—The etiology of vernal conjunctivitis is still a closed chapter, although the majority of ophthalmologists have their own opinions on that subject; unfortunately, there is no unanimity. Radiant energy of the sun, lymphatic diathesis, infection, anaphylaxis and allergy all have their proponents as to the etiologic import. But certain it is that there is no definite relationship between vernal conjunctivitis and hay fever, nor is there any satisfactory specific pollen treatment. For the major part, treatment is symptomatic. One per cent sulphonated bitumen seems to be of value in some cases; other cases do better under direct applications of radium. The itching can be relieved temporarily by the use of dilute acetic acid, U. S. P., 0.3 cc., distilled water, 30 cc., eye drops as necessary. For a rather complete discussion and bibliography from 1847 to date, the reader is referred to Shieck-Brückner: Kurzes Handbuch der Ophthalmologie **4**:103.

SEXUAL ERETHISM

To the Editor:—A man, aged 37, unmarried, has had tuberculosis for a number of years, but there is little activity at present. At times he has frequent nocturnal emissions, occasionally several in one night, although sometimes there is an incomplete one with no fluid escaping. Bromides in fairly large doses apparently relieve the condition and he may go as long as two weeks without any symptoms, except that he is highly sexual. He states that when he kisses a woman or comes in contact with her there is an escape of thin white fluid "like the fluid from a coryza or hay fever." Also that when sexual intercourse is indulged in the penis is hardly within the vagina before the erection is over, that there is very little relief from intercourse, and that the following night or even the same night there will be an emission, followed by others, necessitating the taking of more bromides. Is this secretion probably free of spermatozoa—that is, the fluid that escapes when merely "spooning"? He has consulted a number of prominent specialists and there has been nothing found pathologically. The urine is clear, and cystoscopic examination is negative. His sexual experience has been limited, as he is opposed to unwedded intercourse. He was advised to seek relief in semiweekly intercourse but tried it for only a short time. There is no history of venereal disease. The Wassermann reaction is negative. Kindly advise diagnosis and treatment. Please omit name and address.

M.D., Colorado.

ANSWER.—The condition here so well described is not an uncommon one in the experience of the sexologist. It is the case of a man in the height of his sexual activity, indulging in spooning and petting parties, whereby he keeps his sexual apparatus in a state of sexual erethism, and at the same time refraining from sexual intercourse except at rare intervals. The result is that his entire sexual apparatus is always in a congested condition, so that the sexual reflex occurs at the slightest provocation. An examination would probably show a congested and hyperirritable prostate and prostatic urethra. The escape of "thin white fluid" from the penis under the stimulus of sexual excitement is a common condition and designated as "urethrorrhea ex libidine sexuale." As is well known, all the accessory urethral glands, at the commencement of sexual excitement, pour into the urethra a fluid whose normal function is to coat the urethral wall with an alkaline medium so that the spermatozoa may not be killed by the normal acid reaction of the urethra. Now if this medium is secreted copiously, and if sexual indulgence does not follow the spooning, it runs out of the urethra. The condition is absolutely harmless. His rapid ejaculation on attempted coitus is also due to the hyperirritable condition of the sexual apparatus, causing at the same time an incomplete emptying of the seminal vesicles and not giving the relief that should follow a normal coitus.

As regards treatment, the patient must abstain from all ungratified sexual intercourse, such as spooning, petting and coitus interruptus. He should also abstain from tea, coffee and alcoholic beverages. Bromides will greatly help but will not cure him. He should not have his prostate massaged but should receive instillations of silver nitrate solutions (from 1:3,000 to 1:500) every five days with the Bangs sound syringe. The prognosis is excellent.

MERCURY POISONING IN INDUSTRY

To the Editor:—For about six months a man has worked at wrapping rolls of paper in cloth material which are coated with a mixture of mercury oleate, which is 26 per cent metallic mercury in an oleate base, diluted in the coating material so that the final finished product contains 0.5 per cent of mercury oleate. One-half pound of this mixture is then coated on a square yard of finished product. The mercury oleate is heated over a small open flame so that it will flow, but not to a liquid consistency and not to a high enough temperature to cause any vapor to be expelled in the room in which the patient works. The warm oleate is then put into a closed tank of the coating material and thoroughly mixed, a cloth is then put through, coated, and rolled by a machine. From the time the mercury oleate is heated to the wrapping of the finished product in paper there is no contact made by human hands. When the rolls come out of the machine, the patient picks up and wraps them in heavy paper. In the course of the usual day's employment he handles about 125,000 square yards of the finished product, touching only the ends of the rolls. After six months of employment he complained of pain in the back, but he continued at work. A day or so later he noticed swelling of the feet, difficulty in urination and diarrhea. At the time he was seen, the teeth were in fair condition; the tonsils were hypertrophic and chronically infected. Blood pressure was 118 systolic, 80 diastolic. Urinalysis showed albumin, with hyaline and granular casts. Subsequently a large volume of urine was collected and special tests were negative for mercury. The blood count showed a slight anemia of the red blood cells with leukopenia. There was no stippling of any red blood cells on the obtained smear. Later observation showed that for twelve hours his intake of fluid was 775 cc.; his output of fluid for the corresponding twelve hours was 250 cc. The man got worse and died some time over four months after the onset of his original complaints. The questions in mind are: 1. How many grains of mercury are present in 125,000 square yards of the finished material? 2. What, if any, of the metallic mercury would he absorb through the skin on the palms of his hands? 3. What, if any, effect would the finished product with the mercury in it which he handled have on the man? 4. Is the absence of mercury in the urine of any diagnostic value? 5. Would the diagnosis of acute nephritis superinduced on a chronic nephritis be logical? 6. What other tests would be of value in eliminating mercury as an etiologic factor in the condition which caused his death? 7. What amount of mercury in a mixture of this character is poisonous? 8. What would be necessary to prove that this patient died of a nephritis caused by mercury? 9. What is the boiling point and the vaporizing point of mercury oleate (26 per cent)? 10. What form of mercury is more poisonous: the metallic form melted or the mercury vapor?

H. C. LYMAN, M.D.,
D. R. MCLEAN, M.D., Chicago.

ANSWER.—1. 568,750 grains.

2. The palms of the hands contain no sebaceous glands; hence little or no mercury will enter, despite sustained massage from work. Mercury readily enters the body through the skin, but chiefly through the sebaceous gland openings.

3. This wholly depends on the amount of the mercury that may leave the finished product and enter the body as a vapor or through the skin after contact. No precise answer can be made to this item.

4. Yes, the absence of mercury in urine suggests that mercury was not the cause of the trouble. Mercury nearly always is present in the urine after the entry of this substance by any portal. In very acute cases the quantity of mercury may be less than a milligram per liter of urine. In the usual nonfatal case, mercury may be found in the urine for many weeks after intake.

5. It is not practical to agree that an acute nephritis was imposed on a chronic state. Certainly a nephritis existed, and an acute nephritis subsequent to a chronic form is not unreasonable.

6. See converse answers in 8. The leukopenia mentioned suggests that benzene or a similar hydrocarbon may have been in the coating material.

7. Such a quantity as from 0.4 to 1 mg. daily taken into the body through any portal, for several months, is sufficient to produce mercurialism.

8. The following would be helpful:

(*a*) Testing the atmosphere wherein the deceased worked, assuming that trade processes are now the same.

(*b*) Examination of other workers similarly exposed for mercurialism.

(*c*) Exhumation, with examination of various organs, including kidneys, for mercury.

(*d*) Revaluation of history and examinations in the light of cardinal manifestations of industrial mercurialism; viz., stomatitis, erethism and tremors.

Nephritis, as the sole manifestation of mercurialism, rarely occurs in industry.

9. Mercury oleate is a loosely combined compound, made from yellow mercuric oxide and oleic acid. It is produced in any strength. Consequently, boiling points and the like cannot readily be stated.

10. Mercury naturally is in a fluid state. Mercury vapors are more of a practical hazard than other states common to industry.

TREATMENT OF SEROUS EFFUSION AFTER PNEUMOTHORAX

To the Editor:—Please give the prognosis and outline the treatment for a serofibrinous, nonpurulent effusion in the left pleural cavity following artificial pneumothorax. The lung is compressed approximately 70 per cent but after aspiration of the greater part of the fluid three times over a period of three months it returns and now has reached a level an inch above the nipple. No air has been given during this time, the lung remains practically the same, and the pressure is only slightly positive. The condition causes no discomfort on the part of the patient. Please omit name and address.

M.D., Texas.

ANSWER.—Serous effusion in some amount develops in upward of 50 per cent of cases in which artificial pneumothorax is used in the treatment of pulmonary tuberculosis. It is estimated that in perhaps 10 per cent of cases in which there is any considerable amount of effusion it becomes purulent. The persistence of purulent effusion is objectionable from the standpoint both of the thickening of the parietal and visceral pleura that results and of the tendency to visceral degeneration from absorption. There is also always a considerable hazard of its becoming secondarily infected with pyogenic bacteria. Drainage then becomes imperative and an extensive thoracoplasty may be necessary eventually to obliterate the cavity.

The most conservative line of treatment of a serous effusion is aspiration of the fluid and replacing it with air, practically all the fluid being drawn off in amounts of a few hundred cubic centimeters and the pressure being adjusted to atmospheric before more is drawn off. In this way the lung is kept undisturbed and, with atmospheric intrapleural pressure, is less apt to recur. Repeated aspiration and air replacement will usually result in cessation of the effusion. If it becomes purulent it is more apt to recur persistently, in which case replacement with oil may be tried; but usually a thoracoplasty will bring about obliteration of the cavity.

PERIODIC SWELLING OF ANKLE

To the Editor:—A woman, aged 62, under my care, single, has had periodic attacks of swelling and severe pain in the right ankle for the past three years. They appear as regularly as a menstrual period, every month at the same time, last about five hours, and disappear as suddenly as they came. Examination at the time of the pain shows the ankle and dorsum of the foot swollen and tender, but with no change in the appearance or the temperature of the skin. The dorsalis pedis impulse is palpable. She has no evident foci of infection, doesn't smoke or drink, is able to do housework without difficulty, and her blood pressure is 190 systolic, 110 diastolic (constant on many examinations). Could you suggest what it might be and advise as to treatment? Please omit name.

M.D., New York.

ANSWER.—The diagnosis here is uncertain: intermittent hemo-arthrosis or hydro-arthrosis, possibly edema. Further studies, including the taking of roentgenograms, should be made. Inquiry should elucidate any history of vicarious menstruation earlier in life or of hemophilia in the family; study should be made of coagulation factors, blood uric acid and edema. Observation in a hospital, with admittance a day before the expected attack, in bed, and the patient under observation of a nurse at the time of the attack, will exclude malingering. The treatment is direct and specific if the diagnosis is established. Failing in diagnosis, one should hospitalize the patient for observation and treatment. An antiedematous regimen, including rest in bed and elevation of the leg at the time of the attack, might be tried, with ammonium chloride or nitrate, from 8 to 10 Gm. daily for five days prior to the attack; merbaphen may be given intravenously, twelve hours before the attack. An antihemorrhagic regimen would include administration of calcium compounds and blood transfusion. Increasing doses of histamine may be given, from 0.01 mg. subcutaneously every three days until 0.1 mg. has been reached.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Milwaukee, June 12. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The *written* examination will be given in cities of the United States and Canada where there is a Diplomate who may be empowered to conduct the examination, April 1. The *general oral, clinical and pathological* examination will be held in Milwaukee, June 13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Milwaukee, June 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: *Reciprocity.* San Francisco, Jan. 18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

MINNESOTA: Minneapolis, Jan. 17-19. Sec., Dr. E. J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA: *Reciprocity.* Carson City, Feb. 6. Sec., Dr. Edward E. Hamer, Carson City.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 30–Feb. 2. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315, State Education Bldg., Albany.

SOUTH DAKOTA: Pierre, Jan. 17. Dir., Dr. H. R. Kenaston, Bonesteel.

VERMONT: Burlington, Feb. 15-17. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science.* Seattle, Jan. 12-13. *Regular.* Seattle, Jan. 16-17. Dir., Mr. Charles R. Maybury, Olympia.

WYOMING: Cheyenne, Feb. 6. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Tennessee June Report

Dr. A. B. DeLoach, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Knoxville, Memphis and Nashville, June 15-16, 1932. One hundred and eight candidates were examined, 107 of whom passed and one failed. The following colleges were represented:

PASSED College	Year Grad.	Number Passed
Emory University School of Medicine	(1932, 3)	3
Rush Medical College	(1932)	1
Tulane University of Louisiana School of Medicine	(1932, 2)	2
Ohio State University College of Medicine	(1931)	1
Jefferson Medical College of Philadelphia	(1932)	1
University of Pennsylvania School of Medicine	(1930)	1
Meharry Medical College	(1931), (1932, 32)	33
University of Tennessee College of Medicine	(1932, 26)	26
Vanderbilt University School of Medicine	(1932, 39)	39

FAILED College	Year Grad.	Number Failed
Meharry Medical College	(1932)	1

Dr. DeLoach also reports 13 physicians licensed by endorsement from Feb. 6 to Nov. 1, 1932. The following colleges were represented:

LICENSED BY ENDORSEMENT College	Year Grad.	Endorsement of
George Washington University School of Medicine	(1916)	Maryland
University of Louisville Medical Department	(1910)	Kentucky
University of Louisville School of Med	(1929), (1931, 3)	Kentucky
Tulane University of Louisiana School of Medicine	(1930)	Louisiana
Johns Hopkins University School of Medicine	(1927)	N. B. M. Ex.
Jefferson Medical College of Philadelphia	(1914)	N. Carolina
University of Pennsylvania School of Medicine	(1926)	Minnesota
Woman's Medical College of Pennsylvania	(1930)	N. B. M. Ex.
University of Virginia Department of Medicine	(1930)	Virginia
University of Alberta Faculty of Medicine	(1925)	Michigan

Rhode Island October Report

Dr. Lester A. Round, director, Rhode Island Public Health Commission, reports the written and practical examination held in Providence, Oct. 6-7, 1932. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Eight candidates were examined, 7 of whom passed and 1 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent
Harvard University Medical School	(1928)	85.5
Tufts College Medical School	(1931)	87.9,
(1932) 82,* 85,* 86.5,* 87.5 *		
University of Michigan Medical School	(1921)	84

FAILED College	Year Grad.
Tufts College Medical School	(1917)

* The licenses of these applicants are being withheld pending completion of an internship.

Book Notices

The Failing Heart of Middle Life: The Myocardosis Syndrome, Coronary Thrombosis, and Angina Pectoris, With a Section Upon the Medico-Legal Aspects of Sudden Death from Heart Disease. By Albert S. Hyman, A.B., M.D., F.A.C.P., Cardiologist, Beth David and Manhattan General Hospitals, New York City, and Aaron E. Parsonnet, M.D., C.M., F.A.C.P., Attending Physician and Cardiologist, Newark Beth Israel Hospital. With a preface by David Riesman, M.D., Sc.D., F.A.C.P., Professor of Clinical Medicine, University of Pennsylvania School of Medicine, Philadelphia. Cloth. Price, $5. Pp. 538, with 166 illustrations. Philadelphia: F. A. Davis Company, 1932.

The theme of this work is set forth in the preface by David Riesman. It is to remove the inferiority complex of the general practitioner and to restore his confidence in his ability to recognize and treat the great majority of all ailments that come under the category of the title. This laudable purpose has been in large measure fulfilled. In an easily understood manner the essential facts are set forth. The style is simple, often familiar. Even a good story with a touch of humor is here and there used to illustrate a point. A little redundancy and floridness of style may be pardoned if, as here, interest is kept up and the page not permitted to drag. Numerous illustrations add to the value of the book. Some, such as the frontispiece, might be criticized as diagrammatic rather than true to life. There is a full bibliography and a good working index. Naturally, in a consideration of the failing heart of middle life, the coronary artery looms large. Much of the space is taken up by a consideration of acute and chronic coronary thrombosis and occlusion, and angina pectoris. In these important chapters, diagnosis and treatment are discussed with rich detail. Thus the subject of the electrocardiographic changes in coronary disease takes up more than a hundred pages; the functional tests for cardiac reserve, ten pages. Even the newer treatment of angina pectoris—of debatable value—by tissue extracts is given several pages. The medicolegal aspects of sudden death from heart disease are often not touched on in books on cardiology. A useful chapter on this topic will be found in this work. The authors use Riesman's term "myocardosis syndrome" for what is oftener called fibrosis of the myocardium, chronic "myocarditis," or failing heart. Whether this new term connotes more than a new name for an old disease or that, as they contend, it designates a new approach to the understanding of the earliest manifestations of coronary and myocardial insufficiency, may be questioned. As was stated in the beginning, the book is intended for the general practitioner. He should find it useful for reference and as a guide in his everyday practice.

Tuberkulöse Infektion und Augenleiden. Von Prof. F. Schieck, Geh. Medizinalrat, Vorstand der Universitätsaugenklinik in Würzburg. Nr. 48, Tuberkulose-Bibliothek, Beihefte zur Zeitschrift für Tuberkulose. Herausgegeben von Prof. Dr. Lydia Rabinowitsch. Paper. Price, 15 marks. Pp. 125, with 52 illustrations. Leipzig: Johann Ambrosius Barth, 1932.

This is the section on the eye from the tuberculosis library published by the *Zeitschrift für Tuberkulose* and edited by Prof. Lydia Rabinowitsch. The material is well organized and arranged. The author deals first with the direct and indirect pathogenesis of tuberculous eye disease and discusses the tubercle, the tuberculin toxins and anaphylaxis. Next he describes the portals of entry and the relation of eye tuberculosis to the general disease, the immunologic process, and the tendency of tuberculosis to develop following trauma. In the second chapter the author states that, in order to make a diagnosis of tuberculosis of the eye, the usual signs of inflammation lasting over a long period of time, a negative Wassermann reaction, the finding of evidence of active tuberculosis elsewhere in the body and a positive reaction to tuberculin are necessary. He discusses the various types of tuberculin tests and mentions that the lesions in the eye show more activity, such as hemorrhages, around the lesion and later pigment in this area and a reduction of intra-ocular tension following positive reactions. In the third chapter he reviews briefly the experimental work on eye tuberculosis that has appeared in the literature. In the fourth chapter the involvement of the various anatomic structures of the eye with tuberculous infections are discussed, the principal subjects being the conjunctiva, the cornea and sclera, the uveal tract, the retina, the optic nerve and its sheaths, and panophthalmitis. In the fifth chapter the author deals with therapy. He gives first the general and dietetic treatment and then the specific treatment, reviewing the reports of various authors, and discusses also the various reports on light treatment, concluding with the statement that in his clinic he treats all cases of choroidal tuberculosis by irradiation with the Koeppe lamp. Surgical treatment is passed over lightly. He warns against removing solitary iris tubercles and states that his latest treatment, still in the experimental stage, seems to have a quick, favorable action on anterior uveitis. He injects the patient's own blood into the anterior chamber in such cases. The final chapter is devoted to the relation of tuberculous eye disease to scrofulous conditions, both the clinical and the experimental data being brought down to date. The book is well organized and well written, contains many illustrations of merit, and is a worthwhile review of the subject.

The Principles of Orthopedic Surgery for Nurses. By James Warren Sever, M.D., Associate Orthopedic Surgeon, Children's Hospital, Boston. Second edition. Fabrikoid. Price, $2.50. Pp. 267, with 196 illustrations. New York: Macmillan Company, 1932.

Here is a new edition of this excellent book, based on many years of work in the Boston Children's Hospital and the Boston City Hospital. It can be read with great profit by interns and physicians as well as by nurses. It gives in great detail the important daily care of patients who need the highly specialized attention required in the treatment of joint tuberculosis, congenital dislocation of the hip, clubfoot and other orthopedic conditions. The chapter on scoliosis is well handled, without, however, any mention of open operative procedures, which have recently assumed great importance. The last dozen pages of this chapter should have a different page heading, as they do not relate to scoliosis in any way. Ankylosing operations on the spine, hip and knee for tuberculous disease should perhaps have been included in the text, as the postoperative care of such patients requires especial training. In the future editions the adjective "tubercular" should be abandoned in favor of "tuberculous" in speaking of the lesions of tuberculosis. The book should be in the library of all hospitals and individual nurses.

Non-Tropical Sprue: A Study in Idiopathic Steatorrhoea. By Th. E. Hess Thaysen, M.D., Senior Physician to the St. Elisabeth's Hospital, Copenhagen. Paper. Pp. 258, with 39 illustrations. Copenhagen: Levin & Munksgaard; London: Oxford University Press, 1932.

In his introduction Thaysen states that he has tried to show that tropical sprue, "nontropical sprue" and Gee-Herter's disease (celiac disease, intestinal infantilism), grouped together under the term "idiopathic steatorrhea," are nearly related, probably identical, conditions. His work with these symptom complexes has convinced him not only that these three diseases are nearly related but that they constitute the same disease that occurs in the tropics as sprue and outside the tropics as "nontropical sprue" in adults and as Gee-Herter's disease (celiac disease) in children. Thus, his studies on this subject published in 1931 support the view advanced by Gee that these three symptom complexes constitute "the celiac affection." The "nontropical sprue" forms the connection between tropical sprue and Gee-Herter's (celiac) disease; without knowledge of its existence, "Gee's celiac affection" would be without established foundation. On page 169 he states that there is such a marked correspondence between the anamnesis, the symptomatology and the pathologic anatomy of sprue and nontropical sprue as can be found only in identical diseases. This forms the thesis elaborated in his monograph on nontropical sprue.

The task of establishing the identity of two diseases in the absence of a proved etiologic factor is not a simple matter. Thaysen's monograph, which draws on the literature for a wealth of material which he uses in addition to an immense amount of original data bearing on the subject, proves this. Although he is usually able to show a striking similarity between sprue and nontropical sprue, as in the gradual onset, the prolonged course, the frequency of relapse, the steatorrhea, the osteoporosis, peripheral neuritis, irritability, anemia, anorexia, emaciation, edema, flattened buttocks, large abdomen, avitaminosis, pluriglandular atrophy, tetany, low blood sugar curve, high basal metabolism rate and the absence of pathologic changes, some of his comparisons are not entirely convincing.

Examination of the stool is indispensable in making a diagnosis of sprue. The disease is most often mistaken for pernicious anemia or pancreatogenous fatty diarrhea. The differential diagnosis between sprue and pancreatogenous fatty diarrhea is rather clear cut. The nitrogen elimination is increased constantly in pancreatogenous fatty diarrhea and but seldom in sprue, and the loss is much higher in the former. In nontropical sprue the enzyme content of the duodenal juice is normal, in pancreatogenous fatty diarrhea it is lowered considerably. In most cases of pancreatogenous diarrhea there will be found either a diabetic glycosuria or, after ingestion of dextrose, an alimentary glycosuria of the diabetic type together with a diabetic blood sugar curve. In sprue there is no persistent glycosuria but a normal or low blood sugar curve. The differentiation from pernicious anemia is not so clean cut. The low blood sugar curve which Thaysen first called attention to in nontropical sprue is also found in tropical sprue and in Gee-Herter disease. It was present in five of eight cases of nontropical sprue, once in four cases of tropical sprue, and in all three patients suffering with Gee-Herter (celiac) disease.

The basal metabolism is increased in sprue and nontropical sprue, while in other forms of undernourishment it is decreased.

These few extracts will serve to illustrate the unusual character of the material making up this monograph, which should prove of great interest and value to a large number of physicians, especially those interested in gastro-intestinal and nutritional disturbances. Although celiac disease fits into the picture, there are a number of dissimilarities. Sprue and nontropical sprue continue to relapse over long periods of years with some mortality under the best treatment. Celiac disease, although subject to relapse, once cured usually remains cured. The treatment used in sprue, i. e., large amounts of milk and rather a free diet, cannot be used successfully in celiac disease. A fruit diet is satisfactory in both. It is possible that such differences as do occur are due solely to the age of the patient. The translation is excellent, and the typographic errors can be excused. Dr. Thaysen has not said the last word, but he has offered an important addition to a subject that is still in a nebulous state.

An Introduction to Zoology Through the Study of the Vertebrates With Special Reference to the Rat and Man. By Zeno Payne Metcalf, D.Sc., Professor of Zoology, North Carolina State College. Cloth. Price, $3.50. Pp. 425, with 189 illustrations. Springfield, Ill.: Charles C. Thomas, 1932.

Profusely illustrated with drawings, diagrams and tables, well organized and attractive in printing and make-up, this is an excellent textbook and at the same time a fine elementary reference book on zoology. It bases its discussion on the anatomy of the rat but clearly and interestingly makes reference to numerous other animals, placing them in a correct position in the animal kingdom in such a way that the merest novice can understand. The chapter on embryology, with its chart illustrating fertilization, germ cell formation, cleavage, germ layer formation, segmentation, morphogenesis and growth, is exceptionally good, as is also the chapter on philosophical zoology and organic evolution. The history of zoology gives a useful background and might conceivably have been of greater service to the student or reader if it had been placed first instead of last. There is a good index and the summaries at the head of each chapter make it exceptionally easy to get a well organized picture of the subject material to be handled in that particular chapter. The book is obviously the work of one who has had large experience in teaching. The author frankly credits the fundamental ideas to the authors of other textbooks and claims for himself merely the arrangement of these ideas, "the tiles of the mosaic in a new pattern."

Common Skin Diseases. By A. C. Roxburgh, M.A., M.D., B.Ch., Physician in Charge of the Skin Department and Lecturer on Diseases of the Skin, St. Bartholomew's Hospital. Cloth. Price, 18/-. Pp. 322, with 118 illustrations. London: H. K. Lewis & Company, Ltd., 1932.

This is a refreshing departure from the stereotyped dermatologic textbook of the last fifty or seventy-five years and deals with only a hundred and twenty common skin diseases out of the more than three hundred that are described in the usual complete works. The style is more didactic than that of the encyclopedic modern textbook. Emphasis is placed on differential diagnosis, in which practitioners and students are notoriously weak, and one or two measures for treatment are given. While many textbooks have been presented as designed for students and practitioners, this more nearly approaches the ideal, since many of the others are simply complete compends of dermatology. The relative space devoted to different conditions is, of course, according to the frequency of these conditions in the British Isles rather than in the United States, and not much space is devoted to the functional skin diseases seen more frequently in this country than in Great Britain. However, the fact that the book is written in English should make it valuable for the student or the general practitioner.

Excitability: A Cardiac Study. By W. Burridge, D.M., M.A., Professor of Physiology, Lucknow University. Cloth. Price, $3.85. Pp. 208, with 15 illustrations. New York & London: Oxford University Press, 1932.

In this volume of the Oxford Medical Publications, the author collects and reviews the papers he has published since 1910 on cardiac excitability. The studies have been based on perfusion of hearts by various modifications of Ringer's solution. From this work he has made some interesting observations on the place of calcium, potassium and phosphorus in the rôle of cardiac excitability and contraction. Based on this, he has set up theories of muscular excitability and contraction, explaining antagonism, inhibition and fatigue. The material is controversial and chiefly of interest to the physiologist and the research student. The manner of presentation is often involved and at times seems flippant. In an attempt to avoid controversy, the bibliography is purposely not complete.

Rose Research on Lymphadenoma. Contributors, Sir Thomas Horder, Bart., K.C.V.O., M.D., Physician-in-Ordinary to H. R. H., the Prince of Wales; M. H. Gordon, C.M.G., C.B.E., M.A., Consulting Bacteriologist, St. Bartholomew's Hospital; Kenneth Stone, D.M., M.R.C.P., Assistant Physician, East London Hospital for Children, Shadwell; Lawrence P. Garrod, M.A., M.B., M.R.C.P., Bacteriologist and Lecturer in Bacteriology, St. Bartholomew's Hospital; E. R. Cullinan, M.D., B.S., M.R.C.P., Senior Demonstrator in Morbid Anatomy, St. Bartholomew's Hospital, and B. D. Pullinger, M.D., B.S., Pathologist, Mount Vernon Hospital, Northwood, Middlesex. Cloth. Price 21/-. Pp. 136, with 100 illustrations. Bristol: John Wright & Sons, Ltd., 1932.

This is a collection of six articles on the results of work relating to Hodgkin's disease, supported by the fund donated by Mrs. T. E. Rose. Sir Thomas Garrod discusses briefly but instructively the clinical concept of the disease. Two of the articles deal with cultural and serologic properties of certain yeastlike forms obtained from Hodgkin's disease and other sources. The illustrations of the cultures and of the lesions of these yeastlike organisms seem more elaborate and more expensive than really necessary under the circumstances. There is a brief article on the blood of rabbits and guinea-pigs inoculated with material from Hodgkin's disease. B. D. Pullinger describes the histology and discusses the histogenesis and nature of Hodgkin's disease. This article is abundantly illustrated. Probably the most important outcome of the work dealt with in the book is the demonstration that lymph nodes affected by Hodgkin's disease contain an uncultivated and unseen agent or virus that appears to produce definite effects when introduced into the brain of rabbits. This result, which is described in the article by M. H. Gordon (reprinted from volume 63 of *St. Bartholomew's Hospital Reports*, 1930) on the etiology of Hodgkin's disease, reminds one of the meningo-encephalitis that develops in rabbits from the intracerebral injection of suspensions of lymph nodes in inguinal lymphogranuloma.

A Text-Book of Clinical Neurology. By Israel S. Wechsler, M.D., Professor of Clinical Neurology, Columbia University. Second edition. Cloth. Price, $7. Pp. 759, with 142 illustrations. Philadelphia: W. B. Saunders Company, 1931.

This already well and favorably known textbook has been revised in the second edition by the addition of methods of examination and the results of research that have become accepted knowledge since the first edition (1928); for example, the procedure of encephalography and the pathology of cerebral tumors in relation to clinical course. Some regroupings of diseases have also been made. These changes and additions enhance the value of the book and bring it down to date. The author and the publishers are to be complimented on the work, which retains its position as the leading modern textbook on clinical neurology in the English language. The book can be heartily and unqualifiedly recommended for the use of physicians and medical students.

Miscellany

TUBERCULOSIS IN CHILDREN

Tuberculosis in children may be due to either the bovine or the human type of bacillus. It has long been established that bovine tubercle bacilli derived from milk and ingested in the alimentary canal may cause tuberculosis, especially in children under the age of 15. But the bovine type is not responsible for the chief mortality from tuberculosis in childhood. In bone and joint tuberculosis in children, infections by the human type preponderate over the bovine, while pulmonary tuberculosis of childhood is almost invariably human in origin. Much work has been done to show the paths by which infection enters as these are revealed by the primary lesions, but this has often not been properly correlated with identifications of the type of bacillus concerned. The relative importance of air borne and food borne infections has been much debated, and some have rejected the evidence of aerogenous infection. It has been both asserted and denied that pulmonary tuberculosis is a childhood infection that may long lie dormant and present itself as active disease when it flares up later under the strain of rapid growth, occupation, fatigue or malnutrition. In order to study these questions further and to ascertain more accurately the relation of the bacillary types to pathologic conditions, J. W. S. Blacklock (Tuberculous Disease in Children: Its Pathology and Bacteriology, Special Report Series 172, Medical Research Council, July, 1932) made a study of tuberculosis in infants and young children from a few hours old up to 13 years of age dying in the Royal Hospital for Sick Children at Glasgow, either from illness of any kind or as a result of accident. In a series of 1,800 consecutive necropsies, search was made for evidence of tuberculous disease, the diagnostic criteria being the same throughout the series. Of the whole series, 283 (15.7 per cent) showed gross evidence of tuberculous infection. In 216 cases presenting definite tuberculous lesions, the infective organisms were isolated and typed in 183 cases. In addition, tubercle bacilli were isolated and typed in fifty-three of sixty-five cases of tuberculous lesions in bones, joints, lymph nodes, kidneys and cold abscesses.

Of the 283 cases in which tuberculous lesions were found post mortem, the greatest number occurred during the first year of life and the next greatest in the second. In the first two years of life, nearly all children in whom tuberculous lesions were found died as a result of tuberculosis, while from the fourth to the thirteenth year the tuberculous disease was the cause of death in 75 per cent. Of all the 283 children with tuberculous lesions, 90.1 per cent died as a result of the tuberculous process.

Of the 283 cases presenting tuberculous lesions, 173 (61.1 per cent) were considered as due to primary infection of the lungs or thoracic lymph nodes. In connection with the pathway of infection to the lungs and thoracic lymph nodes there has been great diversity of opinion. From various animal experiments the evidence obtained does not seem to warrant any definite conclusions regarding the alimentary system as the portal of entry of infection in cases in which tuberculous disease affects only the lung or is most advanced in it. In order to determine the primary site of the disease, Blacklock looked for the more or less characteristic primary lung lesion described originally by Parrot in 1876 as occurring in the human subject and as marking the primary site of infection. Parrot and others observed that the primary lung lesion was most often single and subpleural. Histologically this primary focus is a localized patch of tuberculous bronchopneumonia with a tendency to heal in most cases. Furthermore, the lymph nodes at the hilus of the lung are the seat of a similar tuberculous lesion or even an earlier one as compared with the lung focus. Tuberculous tracheobronchial nodes are seldom found without a corresponding lung lesion. For a better understanding of the mechanism of infection and spread of the disease, Blacklock points out that the lungs are rather sharply marked off into definite lymphatic territories which drain into the related tracheobronchial nodes at the hilus and that these nodes are strictly regional and have no direct connection with the lymph nodes in the neck or the abdomen. The efferents from these nodes drain almost directly into the blood stream and the tuberculous infection can be readily spread throughout the body by this means.

The existence of such a primary lung lesion was found by Blacklock in 148 of 173 cases in which the first site of infection was considered to be thoracic. Of the cases presenting primary foci, in 133 there was one each and in fifteen they were multiple. All of them showed evidence of caseation, though in some further changes had taken place, such as cavitation, fibrosis or calcification. Blacklock found these primary lesions more often in the right lung than in the left, the right upper lobe being most frequently involved, and then the right lower, the left upper, the left lower, and lastly the right middle lobe. The anterior aspect of the upper and middle lobes was most frequently affected; the apex of the upper lobes was seldom the seat of the lesion. The tracheobronchial lymph nodes in direct anatomic relation to these foci were always diseased. The most extensive nodular disease was in relation to foci in the right upper lobe. Both on gross and on microscopic examination the lesions in the primary focus and related lymph nodes were of the same age or that in the nodes was more recent. No retrograde spread from the tuberculous tracheobronchial nodes back into the lung substance was observed. This seems to indicate that a lymphogenous origin of the primary focus is unlikely. In some cases there was spread of the tuberculous adenitis to the nodes of the neck or to the lymph nodes in the upper part of the abdomen, but this was always secondary to that at the root of the lungs.

From a histologic study of the primary lesions, Blacklock was unable to demonstrate that any of these had a vascular or lymphogenous origin. In support of the opinion that these primary lesions are of aerogenous rather than hematogenous or lymphogenous origin, he states that, in cases in which the primary site of infection was in the abdomen, 54 (81.8 per cent) were infected with the bovine type of bacillus and 12 (18.2 per cent) with human strains, while from cases with primary thoracic infections, 107 (97.3 per cent) human and 3 (2.7 per cent) bovine strains were isolated. From cases in which the primary lung lesion was found, only human types of bacilli were obtained either from the lesion itself or from the nodes in direct anatomic relation. If the focus had been of hematogenous origin, bovine bacilli should have frequently been found in view of the fact that bovine strains were isolated from 81.8 per cent of the primary abdominal lesions in children from the same series of necropsies as those presenting primary thoracic lesions. Furthermore, Blacklock found that in tuberculous lesions of bones and joints, which are nearly always due to blood-borne infection, the percentage of children with primary abdominal lesions infected with bovine strains was almost thirteen times greater than in cases of primary thoracic tuberculosis. Also in favor of the aerogenous origin of the 107 cases with the primary site of the disease in the thorax was the fact that 92 (86 per cent) were city children, who in consequence of overcrowding run a greater risk of air-borne infection.

In 101 cases (35.7 per cent) of the 283 cases presenting tuberculous lesions, the pathologic evidence was in favor of the site of the first infection being abdominal. Of these, eighteen—all children under 5 years of age—showed gross evidence of intestinal ulceration, chiefly in the lower ilium. In all these children the tuberculous lesion had caused death. All the children under 1 year of age with intestinal ulcers had been fed cow's milk. In the remaining eighty-three cases no ulcers were noted but the mesenteric nodes, chiefly in relation to the lower end of the ilium, were the seat of tuberculous adenitis. Babies who were breast fed for nine months or until death, if that occurred before that time, suffered less from abdominal tuberculosis than infants fed on cow's milk. This was particularly noticeable in the first year of life and also to a lesser extent in the second. The greatest number of primary abdominal lesions were found in the second year of life; that is, at the period when the children consumed large amounts of raw milk. Primary abdominal tuberculosis was less frequent than primary thoracic tuberculosis throughout all ages. In the cases presenting intestinal ulceration there was more extensive involvement of lymph nodes, and secondary lesions were more frequent than those without ulcers; all the cases in which

there were ulcers were fatal, while of eighty-three patients without ulcers only 71.1 per cent died of tuberculous disease. There were fewer secondary lesions and less extensive nodular involvement in the abdominal cases than in the thoracic. Abdominal tuberculous lesions were found to be less frequently the cause of death than the thoracic, 24 out of 101 (23.8 per cent) being found accidentally post mortem. From these abdominal lesions, twelve human and fifty-four bovine strains were isolated. In infants in the first year of life only one human and no bovine infections were found in babies breast fed for nine months or until death, if this occurred earlier; but in those fed on cow's milk, two human and fourteen bovine infections were found. The greatest number of infections with the human type of bacillus in the abdominal cases was found in infants from 9 to 18 months of age; that is, at the period when children commence to crawl and walk and consequently are more likely to pick up infection from the ground and floors.

Medicolegal

Validity of Regulations Promulgated by State Board of Health

(State v. Goss (Utah) 11 P. (2d) 340)

The Utah state board of health is authorized by Compiled Laws, Utah, 1917, title 40, section 2707, "to make such rules and regulations not contrary to law as may be deemed necessary for the preservation of public health." Section 2717, ibid., makes any violation of the rules and regulations thus promulgated a misdemeanor. Relying apparently on the law cited above, the board adopted, among others, a regulation requiring drinking containers to be sterilized in a designated manner in establishments dispensing soft drinks. The defendant was charged with committing "the crime of violating rules and regulations adopted by the Utah State Board of Health" in that he served a soft drink to a designated person in a glass container not sterilized in accordance with the regulation noted above. The defendant contended that the board had no authority to adopt the regulation in question, since in doing so it was exercising a legislative function which could not be delegated to the board by the legislature. Two lower courts sustained the contention of the defendant and their action was affirmed on an appeal by the state to the Supreme Court of Utah.

The legislative power of the state, said the Supreme Court, is vested by the constitution in the legislature, and, under specified circumstances, in the people of the state. That power may not be delegated by the legislature to other agencies, except where expressly directed or permitted by the constitution. Where, however, a certain policy has been prescribed by statute, the power to make rules and regulations to carry that policy into effect may be delegated to an administrative agency such as a board of health. There is nothing, said the Supreme Court, in the statutes defining a legislative policy with respect to the utensils used in serving the public with soft drinks. True there is a provision in the law authorizing the board to make such rules and regulations not contrary to law as may be deemed necessary for the preservation of public health. Under this language the board is not empowered to pass rules and regulations having the force of law with respect to all matters having some relation to the public health. This, indeed, would be the delegation of legislative power if the words of the statute should be so construed. The language must be taken to limit the power of the board to the particular matters and things specified in other portions of the statutes wherein duties are imposed on the board with respect to particular subjects or situations affecting the public health.

In Compiled Laws, Utah, 1917, title 40 (section 2705 et seq.), the legislature has enacted laws on definite subjects relative to public health. In sections 2714 to 2717 of that title the subject of sanitation of public buildings is dealt with. The board is authorized to prepare and enforce regulations governing the proper disinfection and sanitation of public buildings, railway coaches and sleeping cars, and to prescribe a sanitary code with respect to hygienic and sanitary conditions in such places. The quarantine of contagious diseases is dealt with in a similar manner in sections 2726 to 2757; swimming pools and bathing places by chapter 57, Laws of Utah 1921; and sanitary inspection of offices and equipment of medical practitioners by chapter 58, Laws of Utah 1921. In each of these instances a legislative policy is announced and a law has been enacted. In order to carry out the policy thus announced, authority to make rules and regulations has been delegated to the board and penalties are provided for failure to obey such rules and regulations when promulgated. Delegation of power of this sort will be sustained by the courts.

In this case, however, there is no indication of a policy with respect to the subject of utensils used in serving the public with drinks. Nor is there anything to indicate that the adoption of the regulation in question was made necessary as an emergency measure or because of an epidemic of contagious disease. The preservation of health is of prime importance to the state, and courts, in reviewing regulations adopted by boards of health in the actual meeting of such emergencies, will go far to uphold them. The same liberal policy will prevail in dealing with diseased persons. But none of these reasons exist here and the regulation adopted by the board of health is invalid.

Malpractice: Limitation of Actions.—A Kentucky statute provides that an action against a physician for malpractice shall be commenced within one year after the cause of action accrues (Ky. Stats., Sec. 2516). The plaintiff sued the defendant-physician, Oct. 4, 1930, alleging that on Sept. 3, 1929, he employed the defendant to remove his tonsils and that the physician pretended to remove the tonsils but did not do so. The trial court dismissed the suit, holding that it was barred by the statute. The plaintiff appealed to the Court of Appeals of Kentucky, contending that the suit was not for malpractice but for the failure of the defendant to carry out his contract, and that therefore it did not come within the statute. Though the plaintiff's petition, said the Court of Appeals, is couched in language sounding in contract and does not charge either negligence or lack of skill, yet it is based on the improper performance of the work by the defendant. In *Barnhoff* v. *Aldridge*, 38 S. W. (2d) 1029, a Missouri case, the court said: "The improper performance by a physician or surgeon of the duties devolved and incumbent upon him and the services undertaken by him, whether same be said to be under a contractual relationship . . . or the obligation imposed by law under a consensual relationship, whereby the patient is injured in body and health, is malpractice, and any action for damages, regardless of the form thereof, based upon such improper act, comes within the inhibition of the two-year statute of limitation." And so here. The gravamen or gist of the plaintiff's action is the defendant's wrongful act in failing to remove the tonsils in the course of the operation which he had undertaken to perform. The improper performance by the defendant of the operation was malpractice. The plaintiff's cause of action is governed, therefore, by the statute relating to malpractice. The action of the lower court in dismissing the suit was proper.—*Roush v. Wolfe (Ky.), 47 S. W. (2d) 1021.*

Workmen's Compensation Acts: Right of Commission to Award Medical and Hospital Fees When Employee's Claim Is Denied.—The medical attention and the hospitalization which an employer must furnish under the Virginia workmen's compensation act, said the Supreme Court of Appeals of Virginia, is incidental to and a part of the compensation to which an injured employee is entitled under the act. The employer is liable for medical and hospital expenses only when the employee is entitled to compensation. If an employer promises to pay for medical and hospital services to which the employee is not entitled under the act, that promise may give a physician or hospital a right of action at common law, but it gives no right of action under the workmen's compensation act. The industrial commission can give only such relief as is authorized by the act, and that act gives a physician and a hospital no right of action against an employer, independent of the right of the injured employee to compensation under it.—*Merrimac Anthracite Coal Corporation v. Showalter (Va.), 163 S. E. 73.*

Society Proceedings

COMING MEETINGS

American College of Physicians, Montreal, February 6-10. Mr. E. R. Loveland, 133-135 South 36th Street, Philadelphia, Executive Secretary.

Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, February 13-14. Dr. W. D. Cutter, Council on Medical Education and Hospitals, 535 North Dearborn St., Chicago, Secretary.

Clinical Orthopedic Society, Chicago, January 12-14. Dr. E. B. Mumford, Chamber of Commerce Building, Indianapolis, Secretary.

Pacific Coast Surgical Association, Del Monte, Calif., February 24-26. Dr. Edgar L. Gilcreest, 384 Post Street, San Francisco, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fifth Annual Meeting, held in Chicago, Nov. 4, 1932

The President, DR. ALBERT M. SNELL, Rochester, Minn., in the Chair

Relation Between the Iodine in Desiccated Thyroid and the Iodine in Thyroxine

DR. W. O. THOMPSON, DR. L. L. MCLELLAN and MR. P. K. THOMPSON, Chicago: Data show that, on the basis of equivalent iodine contents, thyroxine when injected intravenously and desiccated thyroid when administered by mouth have the same effect on the basal metabolism in patients with myxedema. These observations are consistent with the hypothesis that all the iodine in desiccated thyroid is in a form that is physiologically equivalent to thyroxine and is absorbed quantitatively from the gastro-intestinal tract.

Blood Volume and Total Hemoglobin Variations in Pregnancy and the Puerperium

DRS. WILLIAM J. DIECKMANN and CARL WEGNER, Chicago: Determinations of blood volume, hemoglobin, hematocrit, erythrocyte, serum protein, total base and conductivity were made on the same women throughout pregnancy and the puerperium. The average increases at term were: blood volume, 22.5 per cent; hemoglobin, 13 per cent, and hematocrit, 20 per cent. The hemoglobin is relatively, but not actually, diminished in pregnancy. Changes in these various constituents have always been ascribed to a blood dilution, but because the change for each constituent is not a constant, this explanation does not seem tenable. The theory is suggested that the change in these constituents is part of the mechanism by which proper gaseous metabolism of the fetus is assured without undue effort on the part of the maternal organism.

DISCUSSION

DR. GEORGE E. BROWN, Rochester, Minn.: I think that the conclusions of the authors are reasonable. From the physiologic need of the pregnant organism, there is a need for more blood for the fetus. The total circulating blood must be increased; the first response to this need would be by the addition of plasma. Hemoglobin and erythrocytes are added to the blood more slowly, so that later in pregnancy there is an augmented volume with a higher concentration of cells. I think that the most interesting point is the lag of the hemoglobin in keeping up with the cells, indicated by the low color indexes. The erythrocytes are less completely saturated with hemoglobin.

DR. W. O. THOMPSON, Chicago: I should like to ask what position the patients were in when the blood volume observations were made. I have found that in the standing position a normal man may lose as much as 500 cc. of practically protein-free fluid from his plasma, which appears to be largely the result of an increased venous pressure in dependent portions of the body. The fluid thus lost returns to the circulation about thirty minutes after the recumbent posture is assumed. I have also observed that the length of time required for the dye to become uniformly distributed in the plasma throughout the body is much greater in the upright position than in the recumbent position, so that observations based on the concentration of the dye after the usual mixing time of from four to five minutes may give erroneous results if the patient is in the upright position. It would therefore appear desirable to make all observations of the plasma volume after the patient has rested in the recumbent posture for at least thirty minutes. It is possible that in pregnant women the loss of fluid in the upright posture may be more marked than in women who are not pregnant, because of the increased difficulty of returning blood from the legs to the heart.

DR. WILLIAM J. DIECKMANN, Chicago: The explanation as to why there is more blood in the pregnant woman is still not clear. DeLee states that an increased amount of blood is needed in pregnancy to fill up the enlarged veins (varicosities). If this were true, the multipara, with marked varicose veins, would have a greater increase in blood volume than the primipara, but quite often the latter demonstrates a greater increase than the former. Furthermore, the increase occurs early in pregnancy before there are marked varicosities. Therefore, we believe that the increase in blood volume and change in various constituents is not explained satisfactorily by a simple dilution phenomenon. Practically all the determinations were made with the patient in the supine position.

Experimental Production of the Spinal Cord Tumor Syndrome

DR. W. MCK. CRAIG, Rochester, Minn.: The experimental production of the spinal cord tumor syndrome in dogs offers an explanation for the incomplete return of function, in an exceptionally small group of cases, following surgical removal of extramedullary spinal cord tumors. Artificial tumors were inserted within the spinal canal in dogs and after a period of observation were removed. It was found that spinal cords become adjusted to moderate compression, continue to function even after being greatly reduced in diameter, and return to normal after varying periods of compression, if no degenerative changes have occurred. Examination of removed cords revealed definite pathologic changes to explain the clinical problem.

DISCUSSION

DR. HENRY W. WOLTMAN, Rochester, Minn.: It is well known that the brain and spinal cord do not tolerate sudden compression; it is also well known that both organs adapt themselves in a remarkable manner to gradually increasing compression. Thus, cases are sometimes observed in which the spinal cord was reduced to one-half its normal diameter, yet the resulting disability was very slight. It seems a far cry, therefore, from the production of symptoms by the introduction of a hard substance such as bone wax, or even of one that swells fast enough to result in paralysis within a few days, to the condition that results from compression of the cord by a tumor, since in these cases the compression, on the average, goes on for two and one-half years, and in a few instances almost twenty years before operation. It is not the tumor, however, in which Dr. Craig is primarily interested, but the spinal cord. It is not known whether the failure of some patients to recover is due to infarction, to pressure on tracts about which little is yet understood, for example, when paraplegia in flexion results, or whether it is based on still other factors.

DR. W. MCK. CRAIG, Rochester, Minn.: The results of this experimental work might be criticized because of the small number of animals used, but the pathologic changes found so closely follow those of Bornstein that they are fairly conclusive. I am planning to repeat these experiments with the compression at different levels. The clinical problem concerns prognosis in the presence of varying degrees of compression caused by extramedullary spinal cord tumors found at operation. Fortunately, in the large majority of cases there is partial or complete return of function following surgical intervention, and it is in a comparatively small group that pathologic changes prevent some return of function.

Influence of Radiotherm Pyretotherapy on Chloride Metabolism

DR. WALTER M. SIMPSON, Dayton, Ohio: Patients who are subjected to sustained artificial fever (from 104 to 106 F.) for five hours excrete between 3 and 4 liters of sweat. A considerable amount of sodium chloride (from 18 to 24 Gm.) is withdrawn from the blood and tissues as a result of the sweating. Blood chemical analyses usually reveal a decline in blood chlorides during sustained fever, while the nitrogenous products, blood sugar and blood calcium values show a slight

increase as the result of dehydration and concentration. There is a marked decline in the chloride content of the gastric secretion. The symptoms of exhaustion are largely overcome by the supplying of chlorides.

DISCUSSION

DR. LOUIS LEITER, Chicago: I should like to ask the following questions: 1. Were these determinations of blood chlorides done on whole blood or serum? 2. When the patients were kept nearly dry, was there an accumulation of sodium chloride crystals on the skin? 3. Was there any evidence of alkalosis or acidosis? 4. Was the serum p_H determined during the height of sweating? 5. Was any other chloride given besides sodium chloride? 6. Did you put a patient with considerable generalized edema through this test?

DR. ALEXIS F. HARTMANN, St. Louis: Before it should be assumed that the absence of free hydrochloric acid in the gastric juice in such subjects is the result of reduction of plasma chloride, one should consider what happens in certain conditions when much more chloride is lost from the body, as in pyloric stenosis in infants, or gastric fistula. As much as half of the chloride of the body may be lost in these conditions, and yet the gastric juice remains highly acid. On the other hand, it is well known that high external temperatures diminish gastric acidity, particularly in infants. I quite agree with Dr. Leiter that in explaining this one must look into the blood from other points of view.

DR. DONALD P. ABBOTT, Chicago: I should like to ask what percentage of patients vomited and what amount was vomited over the period of observation.

DR. S. A. SHELBURNE, Dallas, Texas: It would be interesting to know whether these symptoms were due to a loss of the chloride ion or the sodium ion. Both ions were lost in the sweat as sodium chloride, and it would be interesting to determine whether salts of chlorine other than sodium would have a beneficial effect. For instance, if the administration of ammonium chloride should prove as beneficial, it would indicate that the chloride ion was the one that was needed and not the sodium.

DR. WILBER E. POST, Chicago: Was the blood pressure taken during the test? I should also like to know whether there was any disturbance of the vasomotor system that could account for something like shock in these cases.

DR. JOHNSON MCGUIRE, Cincinnati: I should like to ask whether any cases have been studied that presented gastric ulcer with hyperchlorhydria, as there has been much discussion regarding the rôle played by hyperacidity in the production of pain in gastric and duodenal ulcer. If there is no diminution in gastric or intestinal peristalsis coincident with the disappearance of free hydrochloric acid from the stomach, such a study might prove of value.

DR. WALTER M. SIMPSON, Dayton, Ohio: The blood chloride determinations were made on whole blood. I have not observed sodium chloride crystals on the skin surface, probably because the sodium chloride crystals are held in solution by the thin film of perspiration which is always present on the skin even in the air-conditioned cabinet. I have not yet investigated the blood p_H; I plan to do so. One reason for my belief that the symptoms of exhaustion are largely produced by the loss of the chloride ion rather than the sodium ion is that the use of other chloride-containing compounds, such as ammonium chloride and dilute hydrochloric acid, produces the same favorable influence on the exhaustion and on the blood chloride level. Thus far I have restricted my endeavors to the artificial fever treatment of syphilis, gonococcal infections, arthritis and vascular diseases of the extremities. I have not studied patients with generalized edema of the chloride-retention type or patients with gastric ulcer associated with hyperchlorhydria. I believe that the rapid decline of hydrochloric acid of the gastric content is determined by the rapid withdrawal of all available chlorides because of the excessive perspiration. Prior to the institution of the chloride-replacement regimen, about one fourth of the patients experienced nausea and vomiting; since that time, these symptoms have practically disappeared. The blood pressure exhibits a moderate decline during the febrile period; in occasional instances this gradual drop is preceded by a slight elevation, particularly if the patient is apprehensive. Apprehension usually disappears after the first one or two treatments. The fall in the diastolic pressure is usually disproportionately greater than the drop in systolic pressure. In those arduous occupations in which men are subjected to high temperatures and low humidity, it is not unusual for these workers to excrete from 4 to 6 liters of sweat a day. Abundant water intake causes further sweating and a greater loss of chlorides in the skin. The use of from 0.3 to 0.6 per cent salinized drinking water has been found to prevent exhaustion and heat cramps. Football coaches advise players not to drink water while actively exercising, in order to avoid the likelihood of cramps. It might be better to permit the players to drink salinized water. It was my custom to keep patients in the hospital for at least twenty-four hours following each artificial fever treatment. Since the salinized water has been supplied during and immediately after the treatment (from 3 to 4 liters of 0.6 per cent sodium chloride solution) it has not been necessary to keep the patients overnight. I now permit the patients to return to their homes from two to three hours after the temperature has reached the normal level.

Studies in Mineral Metabolism in Cases of Nephrotic Edema

DRS. WILLIAM S. HOFFMAN and WILBER E. POST, Chicago: Studies of four patients with nephrotic edema showed parallel balances of water, sodium and chlorine, both during edema formation and remission. A negative potassium balance existed during edema production, with compensatory retention during diuresis. Satisfactory excretion of sodium occurred only with a high level of serum sodium, which level seemed related to that of cell potassium. During diuresis, the excretion of sodium exceeded that of chlorine; during the production of edema the reverse was true, so that edema fluid acted as a reservoir of alkali. With low serum protein, the extent of edema was determined by the amount of water, sodium and chlorine shifted from the blood to the extracellular spaces to maintain normal osmotic pressure.

Generalized Edema Occurring Only at Menstrual Period

DR. WILLIAM A. THOMAS, Chicago: Clinical observations and detailed investigations were made on two women of middle age. Each woman had gone through one pregnancy. During their menstrual periods a syndrome developed comprising generalized edema with a gain in weight of from 10 to 15 pounds (4.5 to 6.8 Kg.) within a few days, choked disks, severe intracranial headaches and anuria. This syndrome was followed by extreme diuresis and recovery from all symptoms until the next menstrual period. Tests were made of renal function, chemical examinations of the blood were made, and the circulatory efficiency was studied. Both patients showed extreme disturbance in the sella turcica. At this date one patient has been completely relieved by injection of the active hormone of the anterior pituitary gland.

Use of Acacia in the Treatment of Edema

DR. ALEXIS F. HARTMANN, St. Louis: Edematous patients with lipoid nephrosis and chronic hemorrhagic nephritis were selected for acacia treatment when they had failed to respond to high protein diets, blood transfusions and the administration of diuretics. The striking results obtained, when correlated with the blood studies, constitute strong evidence in favor of the "lowered oncotic pressure" theory of edema. Evidence was also obtained which suggests that, with restoration of a normal water flow between the blood and the tissues, the danger of fatal peritonitis is lessened, and that, with the establishment of diuresis, the renal lesion of nephrosis heals more promptly.

DISCUSSION ON EDEMA

DR. WILBER E. POST, Chicago: Dr. Hartmann suggests that the difference between a case of nephrosis and one of chronic nephritis is due to the filtration quality of the glomeruli. To me it has always seemed that one must look further back than the kidney glomeruli for the difference in degree of damage that is done to the blood vessels and tissue cells that control the normal balance, the protein metabolism, and therefore the water balance of the body. It will still require much study to locate this difference between these cases but it seems to me that more success is to be attained by proceeding on that

basis. With regard to the effect of thyroid administration, for instance, in one of these nephrosis cases of Dr. Hartmann large doses of thyroid in a case of an obstinate edema were very helpful. It would seem to me that the effect of thyroid is not on the kidney glomeruli but on the metabolism in the tissues which put those tissues into more normal condition of metabolism and freed them from edema.

DR. WILLIAM J. DIECKMANN, Chicago: Menstruation can be construed as a very early abortion. That is, many of the same anatomic, physiologic and chemical changes are common to pregnancy and menstruation. Recently, Anselmino and others have stated that in severe eclampsia the blood contains the pressor and antidiuretic hormones of the posterior pituitary gland. The clinical picture in Dr. Thomas's patients is that of an excess of the antidiuretic fraction, but treatment with anterior pituitary extracts is remarkable. I give anterior pituitary extracts to produce menstruation and to check menorrhagia, and now, in addition, to produce a negative water balance. I have never seen a patient with symptoms of such severity as described by Dr. Thomas but have been outlining treatment for decreased fluid intake in patients suffering from migraine at the menstrual period, without any appreciable improvement. Dr. Hartmann's work with acacia is important. Knowing of his work, about two years ago, I gave acacia solution to several eclamptic patients in whom all types of treatment, including delivery, had been useless. Two patients had been in coma for a period of two days; 1,000 cc. amounts of 20 per cent dextrose produced very little diuresis, but within six hours of the administration of acacia they were conscious and rational, and a diuresis had begun. Dr. Hartmann mentioned the blood dilution that follows an injection of acacia. In eclampsia there is a marked blood concentration, and clinical improvement is usually coincidental with a dilution. The serum proteins were within normal limits, but I believe that there is some change in the proteins, so that they do not bind the usual amount of water. This condition was relieved with the acacia. One severe preeclamptic patient, with headache and dizziness, was also completely relieved of all symptoms within six hours of the injection. The volume of urine and chloride excretion were increased. Usually, as the serum protein decreases, fibrin increases; but following the injection of acacia the serum protein decreases and fibrin also decreases, and it is possible that this diminution may be great enough to interfere with normal coagulation. Acacia should be of value in the treatment of severe burns and intestinal obstruction when a marked concentration of the blood occurs.

DR. LOUIS LEITER, Chicago: I should like to ask Dr. Thomas whether any observations were made on the visual fields, particularly during the presence of choked disks. I should like to know whether solution of pituitary has been used during the edematous or edema-free periods. In connection with Dr. Hartmann's paper, one question that arises is whether the administration of 4.5 per cent sodium chloride might produce diuresis. Since the kidney responds to hypertonic saline solution and since dilution of the plasma proteins occurs, this should produce an ideal condition for increased glomerular filtration.

DR. BAYARD T. HORTON, Rochester, Minn.: I should like to ask Dr. Thomas if he thinks there is any relation between the cyclic edema in this case and the cyclic edema occasionally seen which involves only a part of the body. I saw a case with Dr. Brown which may be of interest from the standpoint of treatment. We had under observation a young woman who had periodic edema of the hand with a seven day cycle. This had been present for a number of years. She was in the hospital under observation and the nurses said that she did nothing to bring about the condition. We were able to prevent this edema by the use of histamine given in small doses prior to the onset of the swelling. The woman remained free of edema for a number of years on this treatment and apparently obtained complete relief by interruption of the sympathetic nerve supply to the involved extremity. This procedure was carried out by Dr. Walter Abbott of Des Moines, Iowa. The case which I have summarized was reported by Dr. Selma C. Mueller in *Medical Clinics of North America* (**13**:1543-1547 [May] 1930).

DR. R. G. PEARCE, Akron, Ohio: I should like to ask whether epinephrine was used in this case of Dr. Thomas. Cases of angioneurotic edema, associated with hives, are very difficult to take care of and in many cases prove to be resistant to the usual treatment of allergy by antiallergic methods.

DR. E. V. ALLEN, Rochester, Minn.: Dr. Thomas mentioned the absence of perspiration. This is seen frequently in disturbances of the sympathetic nervous system and is particularly often associated with postural hypotension. It would be interesting to know the response of the blood pressure of Dr. Thomas's patient to sudden changes in posture. Perhaps the edema mentioned bears some relationship to the sympathetic nervous system. Dr. Thomas also mentioned that the patient was sensitive to low temperature during the premenstrual period. This might be due to inadequate function of the sympathetic nerves.

DR. M. H. NATHANSON, Minneapolis: I should like to ask whether blood transfusions were tried after acacia had been used. In a patient with nephrosis, in whom acacia had been used, an anemia later developed, and in trying to cross match the blood it was found that the blood, which had been compatible before treatment, had become incompatible and there was agglutination of the donor's cells.

DR. GEORGE BROWN, Rochester, Minn.: The syndrome Dr. Thomas discussed is probably an entity. When more is known about this syndrome, perhaps it will represent the antithesis of diabetes insipidus. One would anticipate such a condition of the pituitary body as has been shown to appear in other endocrine glands. This condition represents an extraordinary clinical syndrome.

DR. DON C. SUTTON, Chicago: I have had a case under observation for several years that is the exact parallel of the case presented by Dr. Thomas. The patient is a woman, aged 32, who complains of headaches preceding and during the menstrual period. A roentgenogram at this time was identical with that shown by Dr. Thomas. My patient had moderate myxedema. It was found that by giving the whole gland pituitary this condition would disappear. At one time a diagnostic spinal puncture was done. Following this for a period of a year, while continuing on the pituitary treatment, she had no headaches. Since then she has requested repeated punctures. It parallels exactly the case of Dr. Thomas except that there has been no edema.

DR. WILLIAM S. HOFFMAN, Chicago: Along with the relationship that was discussed between the fixed base content of the serum and the potassium content of the red cells there is recognized the possibility of a relationship between the fixed base content of the intercellular fluid and the potassium content of cells of the body. If it were at all possible to study the potassium of the cells of the body, a much more accurate idea could probably be obtained of the metabolism of the cells and its relation to edema. I should mention that possibly the actual difference between the fixed base level of any two patients is independent of the disease. It may be related to the disease but it seems more likely that two different persons may have constitutionally different fixed base levels and these patients would respond differently to a given treatment under constant conditions. The one whose level was closest to the threshold value would not get a diuresis and the one whose value was higher would get an active diuresis, as was noticed in my first patient.

DR. WILLIAM A. THOMAS, Chicago: With regard to the retention of pituitary substance in these toxemias and the curing by anterior pituitary injections, I am not sure that anterior pituitary is being injected when this sex hormone from the urine of pregnant women is injected. It is this substance which is responsible for the Aschheim-Zondek test, but whether that is purely anterior pituitary or whether it contains also posterior pituitary substance which is isolated in connection with the Aschheim-Zondek test I cannot say.

In answer to Dr. Leiter's question, the visual fields were carefully examined and transient bitemporal hemianopia was found. The mechanism is that there is a calcification of the upper portion of the pituitary preventing normal function and resulting in generalized edema. The increased spinal fluid pressure and the choked disks are a result of the increased intracranial tension but not of the calcification. As to the solution of pituitary, the first patient I presented was treated

in Los Angeles for some time with solution of pituitary without effect but she has not had anterior pituitary. The other patient, who was successfully treated with anterior pituitary, also had theelin, posterior pituitary and corpus luteum substance. The only one that had any effect was the posterior pituitary. Later on I did get the anterior pituitary and this was entirely successful. I do not believe this is a cyclic edema. Certainly following a severe trauma it might be but I do not believe this is. No epinephrine has been given. There are many things I should like to try, but this patient has been so cooperative and willing to do everything and so beset by experiments of all sorts that I have not wanted to impose on her further, and, while epinephrine was considered, it has not been used. Concerning the absence of perspiration, I do not feel that this is due to a hypothyroid condition. This patient does not present a true hypothyroid condition because her basal metabolic rate has been normal, although her weight has been influenced by a combination of diet and thyroid medication. She says, however, that she feels worse when she gets thyroid treatment. I feel as Dr. Brown does that this condition is an entity. It has a complete lack of all other factors usually found in edema. I believe it is an entity, as is diabetes insipidus. In the same way there is a contrast between edema and dehydration. Dehydration is not merely a lack of fluid. It is the condition in which tissues are in a refractory state and will not take more fluid, and that, too, is an entity. I think that probably that ability of the tissues to take or reject water is controlled by these pituitary substances.

In regard to Dr. Sutton's remarks, I am interested to hear about this patient. I have asked every one for information concerning such cases and no one has had much experience. Dr. H. O. Jones has given me references to a number of his patients who had the same type of headache, and it was from him that I got the suggestion of using posterior pituitary before anterior pituitary was available.

DR. ALEXIS F. HARTMANN, St. Louis: In my opening remarks I considered edema to be the result of quite a number of factors, the most important of which it seemed to me was the lowered oncotic pressure of the plasma; my paper, of course, was limited to this one phase of the subject and particularly concerned substitution of acacia for plasma albumin. In attempting to explain how the administration of thyroid occasionally relieves nephrotic edema, one must consider this point: If the oncotic pressure of a given edematous subject is but slightly below the value compatible with normal interchange of water, a gain in plasma albumin of from 0.25 to 0.5 per cent may be followed by diuresis. It seems quite possible to me that in the edematous individual who does have a low metabolic rate the manufacture of plasma albumin may also be at a lower than maximal rate and that the administration of thyroid may favor manufacture of plasma albumin. If this is the case, only a short time would be required, if other factors were favorable, to reach a level of plasma oncotic pressure incompatible with edema. I have secured evidence which certainly would indicate that different types of individuals make plasma albumin at different rates. For instance, such protein is made very rapidly in the diabetic child, who becomes malnourished as a result of failure to metabolize carbohydrate, particularly when on a protein-poor diet. In such instances, after the institution of an adequate diet and insulin dosage, as much as 1.25 Gm. of plasma albumin per kilogram daily may be manufactured. The "nutritional" edema of such patients disappears very rapidly in response to rapid restoration of the plasma albumin. In malnourished infants, however, with infection who have had prolonged periods of vomiting and diarrhea with the later development of edema there is less rapid manufacture of plasma albumin. Similarly, in cases presenting chronic hemorrhagic nephritis with attendant anemia and malnutrition, plasma albumin seems to be made less well than in the otherwise normal diabetic subject.

Dr. Leiter has raised the point whether or not 4.5 per cent sodium chloride alone could cause diuresis in the nephritic subject. I feel that it will not. Of the thirty injections of acacia that I gave to the edematous subjects, in approximately fifteen the acacia with 4.5 per cent sodium chloride was used. In approximately one fourth of this number salt-free material was used, and in the remaining one fourth acacia with 1 per cent sodium chloride was administered. If there was any difference at all to be noted in the diuresis which followed these injections, it would seem that the acacia with hypertonic sodium chloride delays slightly the appearance of the diuresis.

Another point that was raised was whether or not transfusions could be performed after acacia had been administered, and whether or not acacia might change the blood grouping of the subject. I have frequently performed transfusions without reaction after subjects with nephrosis and chronic hemorrhagic nephritis had received acacia. I have noticed, however, that in making leukocyte counts on subjects who have received acacia the addition of acetic acid causes a precipitate to form, which makes it difficult to count leukocytes accurately. In such a nonspecific way, acacia might apparently influence blood grouping.

Concerning reactions after acacia, I would have liked to discuss this point in detail. I have seen one severe reaction in which asthmatic symptoms developed during injection and was accompanied by considerable shock. This reaction, as well as most of the other less severe reactions, occurred when one particular batch of material was used. This material was darker in color and distinctly smoky. I feel strongly that reactions were due to impurities in the acacia. I have taken up this matter with the Eli Lilly Company and lately have been using a product that gives very little reaction other than temporary headache with occasional vomiting. Epistaxis has also occasionally occurred, associated with increased blood pressure following injection, particularly in the subjects with chronic nephritis. Another point that I would like to emphasize is that fatal termination in cases of nephrosis is usually the result of fatal peritonitis. Apparently associated with bacteremia accompanying acute infections of the respiratory tract, organisms readily enter the peritoneal cavity, possibly because of the marked tendency for water to do likewise; once there, the organisms tend to grow luxuriously. It is my impression that the growth with fatal outcome is possibly dependent chiefly on the fact that filtration is in the direction of the peritoneal cavity and not in the direction of the lymphatic and the blood stream, as it is normally. It seemed to me that such patients withstood infection much better when kept edema free.

Tuberculosis Among Nurses: Further Observations

DR. EVERETT K. GEER, St. Paul: Two years ago a report was made of an investigation concerning tuberculosis among student nurses at Ancker Hospital in St. Paul. That report showed that tuberculous disease had developed in 6 of 110 nurses in two years. Five of these six women had entered training exhibiting no reaction to 1 mg. of old tuberculin given intradermally. The evidence pointed strongly to the fact that nurses were acquiring massive infection during their training, part of which was spent in the tuberculosis department. It was recommended to the hospital authorities that strict medical aseptic technic be instituted in the tuberculosis department, that single chest roentgenograms be made of all patients entering the hospital, and that nurses be instructed to send all sputum to the laboratory. The first of these suggestions has been in effect for more than eighteen months. The others have been held in abeyance for various reasons. Since September, 1930, tuberculous disease has developed in 3 of 181 new nurses.

Diagnosis of Hypogonadism in the Male

DR. E. P. MCCULLAGH, Cleveland: A method for the assay of blood and urine for testicular hormone has been described, and has been used as a laboratory test for hypogonadism. The clinical signs and symptoms of testicular insufficiency are rather indefinite. Approximately 50 per cent of the patients diagnosed clinically as having hypogonadism have been found to have a normal quantity of the hormone in their urine. The symptoms of patients who are excreting a normal amount of hormone are not relieved by the injection of additional amounts of hormone. The urine of women also contains a very definite amount of a substance which will promote the growth of the comb of a capon. Several oophorectomized women have been found to excrete this substance. Eunuchs do not excrete male sex hormone. There is evidence to indicate that women suffering from hypertrichosis excrete large quantities of comb-growth-promoting substance.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

2: 137-172 (Oct.) 1932

*Primary Pneumothorax with Continuous Tubular Drainage for Acute Empyema. M. J. Gelpi, New Orleans.—p. 137.
Surgical Treatment of Neuralgia. A. S. Taylor, Birmingham.—p. 139.
Increasing Mortality from Appendicitis. J. O. Lisenby, Atmore.—p. 141.
Nutritional Problem of School Child in Relation to Tuberculosis. L. W. Roe, Mobile.—p. 146.
Importance of Postnatal Care. K. B. Williams, Hartford.—p. 148.
Placenta Praevia. G. G. Woodruff, Anniston.—p. 150.
Management of Glaucoma Simplex. S. Kirkpatrick, Selma.—p. 154.
The Blood Wassermann. W. E. Wilson, Montgomery.—p. 157.

Primary Pneumothorax with Tubular Drainage.—Gelpi outlines a method of applying closed drainage in acute empyema, which is simple and easy of execution, which fulfils all the requirements of an efficient treatment and which in his own hands has given good results. The technic is as follows: After the pus cavity has been localized by physical signs and the roentgen ray, under local anesthesia, the cavity is aspirated at a dependent point, material is collected for cultures and the needle is replaced by a trocar and cannula. The trocar is removed and quickly replaced by a catheter of the same size, previously clamped at the distal extremity. The catheter should be inserted so that it will point downward. The cannula is then removed, the catheter, which forms a fairly tight joint with the thoracic wall, being left in. A small dressing is applied at this joint and the tube is firmly held in place by means of a zinc oxide plaster. At the first sitting, each 50 cc. of pus aspirated is immediately replaced by 50 cc. of air. This is repeated until the cavity is empty. The tube is then clamped and fixed to the chest with a gauze and zinc oxide plaster. Following this, every two or three hours, a syringe is connected to the tube, the clamp removed and all available pus aspirated. No air is injected at these subsequent aspirations unless aspiration produces a cough or unless the tube is obstructed. No lavage is done unless an obstruction in the tube fails to be dislodged by the injection of a small amount of air. In this event the tube is cleaned out with a small amount of surgical solution of chlorinated soda. As the reaccumulation of fluid diminishes, the frequency of aspirations is also diminished until single daily aspirations are sufficient. The patient is at first treated in bed, but as soon as the temperature, pulse and respiration permit he is allowed to sit up. The advantages claimed for this method of treatment are that: 1. The empyema cavity is completely emptied from the beginning. 2. By means of the catheter, provision is made for the disposal of the reaccumulation of pus, and prolonged, efficient, adequate drainage is obtained without further surgery. 3. There is no initial collapse or profound depression, accompanied by coughing, clammy sweating, and alarming acceleration of pulse rate. 4. The patient remains clean and comfortable. 5. The lung is permitted to reexpand before unyielding, fibrous adhesions form, a condition that is essential for the obliteration of the empyema cavity. 6. Septic absorption is reduced to a minimum.

American Journal of Physiology, Baltimore

102: 1-266 (Oct. 1) 1932

Urea Clearance in Normal Dogs. W. W. Summerville, R. F. Hanzal and H. Goldblatt, Cleveland.—p. 1.
Experimental Study of "The Constitutional Factor" in Etiology of Rickets. A. F. Hess and S. N. Blackberg, New York.—p. 8.
Chemical Mediation of Autonomic Nervous Impulses as Evidenced by Summation of Responses. A. Rosenblueth.—p. 12.
Effect of Progestin-Containing Extracts of Corpora Lutea on Uterine Motility in Unanesthetized Rabbit, with Observations on Pseudopregnancy. S. R. M. Reynolds and W. M. Allen.—p. 39.
High Frequency Resistance of Human Tissue. A. Hemingway and J. F. McClendon.—p. 56.
Insensible Water Loss Through Skin. A. Vasti.—p. 60.
Simultaneous Internal and External Stimulation of Iris by Adrenin. T. Schlossberg.—p. 71.
Flexor Rigidity of Hind Legs and Priapism in "Secondary" Spinal Preparation of Male Cat. J. G. D. de Barenne and Y. D. Koskoff.—p. 75.
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Continuous Pancreatic Secretion. T. F. Zucker, P. G. Newburger and B. N. Berg, New York.—p. 193.
Amylase of Serum in Relation to Functional States of Pancreas. T. F. Zucker, P. G. Newburger and B. N. Berg, New York.—p. 209.
Further Observations on Glomerular Function. H. L. White, St. Louis.—p. 222.
Further Considerations of Properties of Gonad-Stimulating Principle of Mare Serum. H. H. Cole, H. R. Guilbert and H. Goss.—p. 227.
Interaction of Estrin and Ovary-Stimulating Principles of Extracts of Urine of Pregnancy. O. S. Baum and G. Pincus.—p. 241.
Effect of Stimulation of Cervical Sympathetic Trunk on Energy Metabolism of Rabbits. H. F. Haney.—p. 249.
Effect of Muscular Work and Competition on Gastric Acidity. Frances A. Hellebrandt and Meryl M. Miles, Madison, Wis.—p. 258.

Annals of Medical History, New York

4: 415-508 (Sept.) 1932

History of Blood Transfusion. L. M. Zimmerman and Katharine M. Howell, Chicago.—p. 415.
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Origin of Male Midwife. W. F. Mengert, Philadelphia.—p. 453.
History of Madder (Rubia Tinctorum). G. R. Cameron, London, England.—p. 466.
Entelechy and Scientific Determinism in Medicine. J. H. Barach, Pittsburgh.—p. 474.
Note on Medical Works of Oliver Wendell Holmes. E. M. Bick, New York.—p. 487.
Life and Times of Dr. William Harvey. W. Herringham, Hampstead, England.—p. 491.

Archives of Pathology, Chicago

14: 437-594 (Oct.) 1932

Hyaline Membrane in Lungs: I. Descriptive Study. S. Farber and J. L. Wilson, Boston.—p. 437.
Id.: II. Experimental Study. S. Farber and J. L. Wilson, Boston.—p. 450.
The Brain Stem in Pneumonia. J. M. Johnston, Pittsburgh.—p. 461.
Viosterol in Experimental Fibrous Osteitis. A. J. Abeloff and I. P. Sobel, New York.—p. 471.
Experimental Pathology of Liver: IX. Restoration of Liver After Partial Hepatectomy and Partial Ligation of Portal Vein. G. W. Stephenson, Rochester, Minn.—p. 483.
Id.: X. Restoration of Liver of the Domestic Fowl. G. M. Higgins, F. C. Mann and J. T. Priestley, Rochester, Minn.—p. 491.
*Hematopoietic Effect of Nuclear Extractives Obtained from Red Blood Cells of Fowl. B. I. Phillips, S. J. Newsom, N. W. Jones and O. Larsell, Portland, Ore.—p. 498.

Hematopoietic Effect of Nuclear Extracts Obtained from Red Blood Cells of Fowl.—Phillips and his associates studied eight times the hematopoietic response in a series of five dogs with severe anemia, produced by periodic bleedings and controlled by a standard diet, to the daily oral administration of 10 Gm. of nuclear extracts from the nucleated red blood cells of the fowl. The response to the feeding of these extracts consisted of a sharp rise in the percentage of reticulated red blood cells, an increase in the red blood cell count and a corresponding increase in the percentage and volume of the hemoglobin content. As no other factors that may influence regeneration of the blood have entered into their controlled experiments, they find it permissible to conclude that a factor

exists within the nucleus of the red blood cell of the fowl which has the power to stimulate markedly the production of blood in the dog. From these results and from other experimental work previously reported by them they believe that it is reasonable to conclude that this hematopoietic stimulant is common to the nuclei of many tissue cells.

Journal of Bacteriology, Baltimore

24: 267-340 (Oct.) 1932

Fermentation of Alpha-Methyl-D-Glucoside by Members of Coli-Aerogenes Group. S. A. Koser and F. Saunders.—p. 267.
Factors Influencing Reduction of Nitrates and Nitrites by Bacteria in Semisolid Media. C. E. ZoBell, San Francisco.—p. 273.
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Note Concerning Effect of Specific Environment on Characteristics and Viability of Several Strains of Aerobacter Aerogenes and Escherichia Coli. W. L. Kulp.—p. 317.
Acid Production and Tolerance of Lactobacilli from Dental Caries and Other Sources as Measured by Glass Electrode. T. Rosebury.—p. 321.
Some Observations on Chitin-Destroying Bacteria. Delia E. Johnson.—p. 335.

Journal of Bone and Joint Surgery, Boston

14: 741-1008 (Oct.) 1932

Angle of Gait: Study Based on Examination of Feet of Central African Natives. D. J. Morton, New York.—p. 741.
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Relation of Abdominal Muscles to Paralytic Scoliosis. C. L. Lowman, Los Angeles.—p. 763.
Cerebral Birth Injuries: Their Orthopedic Classification and Subsequent Treatment. W. M. Phelps, New Haven, Conn.—p. 773.
Pneumographic Method of Recording Gait. R. P. Schwartz and A. L. Heath, Rochester, N. Y.—p. 783.
Rôle of Synovectomy in Chronic Infectious (Proliferative) Arthritis. C. F. Painter, Boston.—p. 795.
*Fracture of Femur in Children. C. F. Eikenbary and J. F. LeCocq, Seattle.—p. 801.
Alcoholization of Peripheral Motor Nerves of Legs in Spastic Paralysis of Childhood. R. R. Fitch, Rochester, N. Y.—p. 805.
*Leg Lengthening with New Stabilizing Apparatus. E. J. Haboush and H. Finkelstein, New York.—p. 807.
Technic for Operative Correction of Bow Legs. C. W. Peabody, Detroit.—p. 822.
The Tendo Patellae: Roentgen Consideration of Its Length. P. O. Snoke, Lancaster, Pa.—p. 830.
Study of Blood Supply of Ligamentum Teres and Its Relation to Circulation of Head of Femur. S. B. Chandler and P. H. Kreuscher, Chicago.—p. 834.
*Survey of Treatment of Tuberculosis of Knee Joint. J. H. Cyriax, London, England.—p. 847.
New Method for Roentgenographic Examination of Upper End of Femur. C. R. Johnson, Los Angeles.—p. 859.
Paralytic Dislocation at Hip in Poliomyelitis. E. R. Elzinga, Flint, Mich., and J. A. Key, St. Louis.—p. 867.
*New Methods of Determining Presence of Upward Displacement of Great Trochanter. N. H. Rachlin, Brooklyn.—p. 882.
*New Treatment of Intracapsular Fractures of Neck of Femur and Calvé-Legg-Perthes' Disease. E. J. Bozsan, New York.—p. 884.
Congenital Fusion of Bones of Foot: Report of Case of Congenital Astragaloscaphoid Fusion. P. W. Lapidus, New York.—p. 888.
Notes on Amputations Connected with Circulatory Disturbances of Extremities. S. F. Stewart, Los Angeles.—p. 895.
Normal and Pathologic Physiology of Nucleus Pulposus of Intervertebral Disk: Anatomic, Clinical and Experimental Study. D. C. Keyes and E. L. Compere, Chicago.—p. 897.
Osteogenesis Imperfecta, with Suggestion for Treatment. W. J. Ryan, Philadelphia.—p. 939.
Congenital Dislocation of Hip: Treatment and Results in Cases Unsuitable for Bloodless or Open Reduction. E. LeCocq, Seattle.—p. 943.
Radial Exostosis Complicating Anterior Dislocation of Elbow. F. Christopher, Winnetka, Ill.—p. 949.
Tendinitis Ossificans Traumatica. H. L. Brumbaugh, Cincinnati.—p. 953.
Fracture of Zygoma. O. C. Hudson, Hempstead, Long Island, N. Y.—p. 958.
Masseter Paralysis in Anterior Poliomyelitis, Treated by Specially Constructed Helmet: Case Report. M. H. Herzmark, New York.—p. 962.
Foot Plate for Leg Splint. T. F. Wheeldon, Richmond, Va.—p. 965.
New Combined Skin Isolation Clip and Retraction. G. K. Coonse, Columbia, Mo.—p. 966.
Choice of Position of Axis of Knee Apparatus. J. J. Nutt, New York.—p. 968.
Sandal for Prevention of Foot Drop for Use with Traction-Suspension Apparatus. C. J. Kraissl, New York.—p. 969.

Fracture of Femur in Children.—Eikenbary and LeCocq state that the requisites for the restoration of normal function of fractures of the femur are union, normal alinement and normal length. Normal apposition, while it is desirable, has little bearing on the result so far as function is concerned. The authors treated forty-one consecutive patients with fractures of the femur by the Russell balanced traction. Only one of these had a fracture of the upper third. The oldest patient in the group was 18 years of age; the youngest, 19 months. Not one patient has the slightest disability. In no case was there any shortening or malalinement. The average period of disability was nine weeks.

Leg Lengthening with Stabilizing Apparatus.—Haboush and Finkelstein believe that by the use of their modification of Abbott's apparatus, Kirschner wires instead of the heavier pins, the insertion of a wire into the os calcis and one into the distal fragment of the tibia, more thorough division of the fascia, division of the interosseous membrane, and complete circumferential division of the periosteum of the tibia and fibula, all at the level of the fibular osteotomy in a nonbinding zone, better control and alinement of the fragments is maintained; therefore, osteomyelitis is less apt to occur, the same relationship between the tibial and fibular fragments is assured during the lengthening process, and the foot is held in a more normal position. The apparatus is designed to rest on any flat surface, so that it is no longer necessary to suspend the limb from an overhead frame or tie the patient to a bed during the lengthening. Plaster may also be readily applied with great ease while the limb remains in the apparatus, so there is no danger of slipping of the fragments; this also permits the patient to begin walking at an earlier date. By the various changes in the technic of the operation, not only is the resistance of the fascial structures entirely overcome, thereby diminishing the amount of pain to the patient caused by the lengthening process, but also the periosteum is preserved so that it may amply cover the gaps in the tibia resulting from the lengthening process.

Tuberculosis of Knee Joint.—Cyriax found in a series of seventy-eight patients that synovial tuberculosis was much commoner than osseous tuberculosis in the knee joint (sixty-eight to ten), and tended to occur at a later age. In no proved case of synovial disease did the patient recover sufficiently to bend the knee to a right angle. In eight of forty-seven cases of unproved synovial disease, full range of the knee was recovered. Of twenty cases of synovial disease treated by immobilization for an average period of five years, in seventeen ankylosis was unsound enough to necessitate arthrodesis. Arthrodesis produced bony union without deformity in all except two patients in whom it was undertaken; one of these died and the leg of the other had to be amputated. A comparison of the synovial and osseous groups with respect to mortality brings out the fact that two deaths occurred in sixty-eight cases in the former group, whereas three deaths occurred in the latter. In half the cases of osseous disease, complete recovery resulted. It is therefore probable that, in cases in which the disease is not too advanced, the knee joint suffers only a so-called sympathetic inflammation from which recovery may reasonably be expected whenever radical treatment can be directed to the focus in the bone without opening the knee joint itself. In the cases proved to be nontuberculous, the disease of the synovial membrane appeared to recover completely, to pass into a condition resembling the osteo-arthritis of middle age, or to get definitely worse with the development of sepsis. The fact that recovery did not occur in any proved cases of synovial disease suggests that the eight cases of unproved disease in which recovery did occur may have been wrongly diagnosed or that they may have been primarily osseous cases in which the bony focus was too small to show on the roentgenogram. To make sure of the diagnosis of tuberculosis of the knee joint, even in cases that have been observed for several years, the author suggests that diagnosis by synovectomy should be carried out on all patients over 9 years of age (except in those in which the roentgenogram gives evidence of a bony focus) as soon as the diagnosis of a chronic arthritis is established. Under the age of 9, since treatment will be by immobilization in any event, a synovectomy is not indicated. The author further suggests that, in proved cases of tuberculosis of the knee joint, immediate arthrodesis should be carried out on patients aged 15 or over. When roentgenologic evidence of destruction of cartilage is present, arthrodesis is indicated in patients over 9 years of age.

Upward Displacement of Great Trochanter.—For the determination of an upward displacement of the great trochanter, Rachlin draws a horizontal line across the crests of

the pubic bones, at right angles with the umbilicus. On its outer aspect this will be opposite the prominent and most palpable part of the great trochanters and about one-half to three-fourths inch below their superior borders. The author noticed variations from this rule in patients who have exceptionally narrow pubic bones, which necessarily brings their level down to a lower horizontal plane, and in those who have exaggerated posterior curving of the sacrum, as in spondylolisthesis, thus raising the plane of the trochanters to a higher level. However, the relative position of the trochanters in relation to each other can still be located with certainty. The advantages of this method are its simplicity and the ease of finding the landmarks even in fat persons.

Intracapsular Fractures of Neck of Femur.—Bozsan states that the method of obtaining the desired communication between the two fragments and increasing the circulation is to establish minute channels by drilling throughout the length of the neck of the femur from the body of the greater trochanter, well into the head, and so to establish an artificial irrigating system. On the conveying of a fresh blood supply to the affected areas, cessation of degenerative changes may be expected. The author reports at present two patients treated by this method, one with an intracapsular fracture of the neck of the femur and the other with degenerative changes of the neck and head of the femur: in both patients the end-results were good. Since January, 1931, the author has performed this operation twenty-four times for intracapsular fracture of the neck of the femur and nine times for different forms of degenerative processes in the neck and head of the femur with uniformly satisfactory results. Obviously, however, a minimum of from eight to ten months is required for a definite and clear demonstration of the results, and therefore the reports of the other cases cannot be included at this time.

Journal of Comparative Neurology, Philadelphia

56: 1-255 (Oct. 15) 1932

The Brain of a Lebanese. C. U. A. Kappers, Amsterdam, Holland.—p. 15.
Some Observations on Structure and Innervation of Smooth-Muscle Fibers (Arrectores Spinarum of Hedgehog, and Blood Vessels). J. Boeke, Utrecht, Holland.—p. 27.
Thalamic Nuclei of Nine-Banded Armadillo (Tatusia Novemcincta). J. W. Papez, Ithaca, N. Y.—p. 49.
Studies in Innervation of Skeletal Muscle: IV. Certain Muscles of Boa Constrictor. Marion Hines.—p. 105.
Cell Structure of Cerebral Hemisphere of Humming Bird. E. H. Craigie.—p. 135.
Laterosensory System of Torpedo Marmorata, Innervation and Morphology. H. W. Norris.—p. 169.
Cortical Destruction of Posterior Part of Brain and Its Effect on Reasoning in Rats. N. R. F. Maier.—p. 179.
Epibranchial Placode of Facial Nerve of Rat. F. L. Landacre.—p. 215.

Journal of Comparative Psychology, Baltimore

14: 183-294 (Oct.) 1932

Experiment in Maze Learning with Ants. S. Evans.—p. 183.
Effectiveness of Food and Electric Shock in Learning and Retention by Rats When Applied at Critical Points in Maze. R. M. Dorcus and W. L. Gray.—p. 191.
Water Temperature as Incentive to Swimming Activity in Rat. E. G. Wever.—p. 219.
Intercorrelations of Measures of Ability in Rat. W. D. Commins, Q. McNemar and C. P. Stone.—p. 225.
Technic for Marking Rats Numerically with Dye. L. G. Stockdale.—p. 237.
Comparative Behavior of Primates: III. Complicated Delayed Reaction Tests on Primates. H. F. Harlow.—p. 241.
Id.: Delayed Reaction Tests on Subnormal Humans. H. F. Harlow and R. H. Israel, Warren, Pa.—p. 253.
Antagonistic Visual Discrimination Habits in White Rats. I. Krechevsky.—p. 263.
Maze Learning After Lesion in Cervical Cord. O. C. Ingebritsen.—p. 279.

Journal of Industrial Hygiene, Boston

14: 283-316 (Oct.) 1932

Chronic Poisoning by Oxalic Acid: Report of Case and Results of Study Concerning Volatilization of Oxalic Acid from Aqueous Solution. C. D. Howard, Concord, N. H.—p. 283.
Asphyxia from Unexpected Cause. E. L. Middleton, London, England.—p. 291.
Carbon Monoxide Survey in Liberty Tubes, Pittsburgh. C. B. Maits and Carbon Monoxide Survey Committee, Pittsburgh.—p. 295.
Modified Form of Greenburg-Smith Impinger for Field Use, with Study of Its Operating Characteristics. T. Hatch, H. Warren and P. Drinker.—p. 301.

Journal of Pediatrics, St. Louis

1: 413-536 (Oct.) 1932

Science and Art in Child Nourishment. C. A. Aldrich, Winnetka, Ill.—p. 413.
*Comparative Study on Use of Unsweetened Evaporated Milk and Bottled Cow's Milk in Infant Feeding. Lillian Kositza, Los Angeles.—p. 426.
Diffuse Sclerosis and Malformations of Brain in Child Two Years Old. K. Lowenberg and D. M. Cowie, Ann Arbor, Mich.—p. 435.
*Toxemia of Upper Intestinal Obstruction, Its Nature and Treatment. H. T. Nesbit, Dallas, Texas.—p. 447.
Acute Epidemic Tracheitis: Preliminary Report. W. A. McGee, Richmond, Va.—p. 453.
Sydenham's Chorea: Present Status of Treatment. J. R. Gerstley and S. A. Wile, Chicago.—p. 458.
*Brucella Abortus Infection in Infancy and Childhood: Review of Literature and Report of Case of Six and One-Half Year Old Child. J. P. Hubbard, Boston.—p. 464.
Evaluation of Diphtheria Immunization. H. E. Thelander and K. Kilgariff, San Francisco.—p. 470.
Anemia of the New-Born in Three Successive Siblings. L. H. Segar and W. Stoeffler, Indianapolis.—p. 485.
Xanthomatosis (Lipoid Histiocytosis): Report of Case. J. C. Savage, Los Angeles.—p. 491.
Congenital Malformation of Bile Ducts: Report of Three Cases in One Family. L. K. Sweet, Boston.—p. 496.
Antiques of Pediatric Interest. T. G. H. Drake, Toronto, Canada.—p. 502.

Evaporated Milk.—From the observation of 217 normal feeding cases and thirteen premature infants, Kositza found that the average normal baby is able to assimilate unsweetened evaporated milk as well as or better than bottled cow's milk (pasteurized or boiled) during the early months of life when milk constitutes the sole food, as evidenced by their increase in weight. Similar good results were obtained in the premature infants. The gain in height was practically the same on the two foods. Vomiting at the onset of the feeding experiment occurred more frequently in the unsweetened evaporated milk group. Whenever the mother could be persuaded to continue on the unsweetened evaporated milk, especially if a good gain in weight was evidenced, the vomiting in most cases was subsequently reported as "just spitting up." Diarrhea was not as frequent on unsweetened evaporated milk as on bottled cow's milk. Constipation, although frequently complained of, was not more marked than on bottled cow's milk. The relative frequency of infections, as evidenced by colds, was about the same in the two groups. The relative incidence of rickets was more marked in the unsweetened evaporated milk group. However, that was undoubtedly influenced by the fact that the babies showing active rickets did not receive cod liver oil or viosterol until the rickets was discovered by roentgenogram—this in spite of the fact that cod liver oil was included as a routine in the author's regimen. The developmental points, as sitting alone, crawling, standing, walking and primary dentition, were almost identical for the two groups.

Toxemia of Upper Intestinal Obstruction.—Nesbit states that intestinal obstruction, according to reliable statistics, has been accompanied by a mortality rate of more than 50 per cent. The chief factor in the high death rate is the delay in operative intervention with a consequent approach of toxemia. Until recently the appearance of this toxic syndrome has heralded the advent of a fatal termination. In the past, the nature of the toxemia has remained obscure. As the result of recent investigations it is known that characteristic chemical alterations in the blood accompany this syndrome, among which nitrogen retention, alkalosis and hypochloremia are prominent. The significance of these chemical studies is that acute upper intestinal obstruction cannot be treated logically and efficiently unless due consideration is given to chemical changes taking place in the blood. The author discusses the preoperative diagnosis and the medical treatment which will allow the chemical equilibrium of the blood to reach normal and will permit surgical relief with some assurance of a recovery in an otherwise hopeless instance. From recent reports in the literature it is probable that the death rate in high intestinal obstruction will be greatly lessened when proper attention is given to the preliminary and postoperative medical measures.

Brucella Abortus Infection.—A review of the literature of Brucella abortus infection in infants and children indicates the infrequency of the disease in the younger age groups. Hubbard presents a case of Brucella abortus infection in a boy, aged 6, in which the history and clinical course were typical and in which the agglutination reaction, blood culture and urine culture were all positive for Brucella abortus. One

hundred and eleven agglutinations have been done on the serums in cases in which the diagnosis of Brucella abortus infection was considered. Of these, the author's case was the only positive one. The author realizes that 111 agglutinations do not represent a sufficiently comprehensive study from which to draw accurate conclusions. However, it does suggest that, at the present time, not only is the disease rare in childhood but also the number of serologically positive infants and children is small as compared with several recent series which are not limited to children.

Kansas Medical Society Journal, Topeka

33: 351-392 (Oct.) 1932

The Physician's Testimony. L. G. Allen, Kansas City.—p. 351.
Extra-Uterine Gestation. C. E. Joss, Topeka.—p. 356.
Clinical Significance of Achylia Gastrica. A. M. Ginsberg, Kansas City, Mo.—p. 360.
Rheumatic Involvement of Peritoneum. F. A. Carmichael, Osawatomie.—p. 363.
Hygiene of Vision: Educational. J. R. Mathews, Manhattan.—p. 366.

Kentucky Medical Journal, Bowling Green

30: 525-578 (Oct.) 1932

Premature and Immature Infants: Vitality Statistics of Five Hundred and Thirty-Eight Patients Weighing Between One Thousand Grams and Twenty-Five Hundred Grams with Discussion of Their Care and Treatment. T. C. Smith, H. S. Andrews and Margaret Limper, Louisville.—p. 551.
Symposium on Lobar Pneumonia: Diagnosis. J. M. Kinsman, Louisville.—p. 559.
*Id.: Evaluation of Some Newer Methods in Treatment of Lobar Pneumonia. H. R. Leavell, Louisville.—p. 563.
Id.: Complication of Lobar Pneumonia. W. Boggess, Louisville.—p. 569.
Id.: Roentgen Ray in Diagnosis of Lobar Pneumonia. S. E. Johnson, Louisville.—p. 571.
Development of Good Citizenship. J. G. Sherrill, Louisville.—p. 575.

Evaluation of Methods in Treatment of Pneumonia.—From an extensive review of the literature, Leavell finds that in lobar pneumonia digitalis should not be given in a routine manner but only for specific indications. Diathermy and oxygen properly administered in lobar pneumonia frequently give symptomatic relief and may reduce mortality. Concentrated antipneumococcus serum given early and in adequate dosage in type I and II and some group IV cases is of proved value in shortening the disease and reducing mortality by approximately one third. The author concludes that, in contemplating the use of serum, difficulties and possible delay in bacteriologic diagnosis must be considered. This can be partly offset by using polyvalent serum in all cases of definite lobar pneumonia as early as diagnosis is made, as more than 50 per cent will fall into types I or II and will derive benefit from the mixed serum. The potency of the serum must be known and the definite though slight difficulties of frequent intravenous injections weighed. In a patient with previous allergic manifestations, the use of serum may be contraindicated.

Maine Medical Journal, Portland

23: 173-197 (Sept.) 1932

Polycystic Kidneys Occurring in Three Members of Same Family. E. R. Blaisdell, Portland.—p. 174.
Case Records of Central Maine General Hospital. J. Gottlieb, assisted by M. Dionne, Lewiston.—p. 176.

Medical Journal and Record, New York

136: 265-308 (Oct. 5) 1932

Clinical and Laboratory Diagnoses. W. S. Bainbridge, New York.—p. 265.
Internal Secretion of Stomach in Pernicious Anemia. L. H. Bittner, Glendale, Calif.—p. 270.
Vertebral Arthritis. W. J. Moore and D. Kyle, Glasgow, Scotland.—p. 272.
Breech: Aftercoming Head. H. S. Fist, Los Angeles.—p. 275.
Advantages of Evaporated Milk in Allergy and Infant Feeding. J. B. Ross, Chicago.—p. 276.
Death from Sodium Salicylate. D. H. Orgel, New York.—p. 278.

136: 309-352 (Oct. 19) 1932

Spontaneous Hypoglycemia. S. P. Goodhart and J. Lander, New York.—p. 309.
Plastic Repair of Pendulous Breasts. J. W. Maliniak, New York.—p. 312.
Undulant Fever: Report of Seven Cases. O. S. Warr and H. B. Gotten, Memphis, Tenn.—p. 317.
Ocular Refraction and General Medicine. J. I. Pascal, Boston.—p. 319.
Vertebral Arthritis. W. J. Moore and D. Kyle, Glasgow, Scotland.—p. 320.

Michigan State M. Society Journal, Grand Rapids

31: 617-682 (Oct.) 1932

Problems of Medicine. C. F. Moll, Flint.—p. 617.
Pulmonary Cavity and Its Control. W. A. Evans, Detroit.—p. 621.
Diagnosis of Early Tuberculosis in Strict Sense of the Word. J. A. Myers, Minneapolis.—p. 632.
Diagnosis of Bone and Joint Tuberculosis. D. King, Ann Arbor.—p. 637.
Undulant Fever (Brucelliasis). W. M. Simpson, Dayton, Ohio.—p. 639.
Examination of Back: Some Notes as to Significance of Findings. D. C. Durman, Saginaw.—p. 645.
The Ship Surgeon's Career. W. Pyle, Detroit.—p. 648.
Embryohormonic Relations of Endocrine Glands: II. Embryohormonic Relations of Pituitary Gland to Mesodermal Tissues. R. C. Moehlig, Detroit.—p. 656.
Michigan's Department of Health. C. C. Slemons, Lansing.—p. 667.

Minnesota Medicine, St. Paul

15: 567-646 (Sept.) 1932

Cystoscopic Prostatectomy: A Further Report. F. E. B. Foley, St. Paul.—p. 567.
Comparison of Lesions Associated with Duodenal Ulcer in Germany and in United States. W. Walters, Rochester, and W. Sebening, Frankfort-on-Main, Germany.—p. 579.
Important Points in Surgery of Diseased Thyroid. M. Nordland, Minneapolis.—p. 584.
Extra-Uterine Pregnancy. I. Sivertsen, Minneapolis.—p. 590.
Bacteriophage in Treatment of Osteomyelitis: Study of Ten Cases, Including Three Cases Complicated by Staphylococcus Aureus Septicemia. Elizabeth C. Bagley, Duluth, and Margaret Keller, Ann Arbor, Mich.—p. 597.

Missouri State Medical Assn. Journal, St. Louis

29: 443-496 (Oct.) 1932

Retinal Detachment Associated with Proliferative Changes of Retinal Pigment Epithelium Simulating Neoplasm. E. P. North and V. L. Jones, St. Louis.—p. 443.
Incipient Cataract: Its Incidence and Care. M. H. Post, St. Louis.—p. 450.
Advances in Ophthalmology. A. N. Lemoine, Kansas City.—p. 454.
Aneurysms. F. I. Ridge, Kansas City.—p. 456.
*Treatment of Nephritis. D. R. Black, Kansas City.—p. 463.
*Tuberculosis of Kidney. J. R. Caulk, St. Louis.—p. 469.
*Tumors of Kidney. C. E. Burford, St. Louis.—p. 474.
Calculus Pyonephrosis. R. L. Hoffmann, Kansas City.—p. 476.
Some Observations on Nephritis. D. G. Stine, Columbia.—p. 478.
Obstructed Labor. F. van Eman, Kansas City.—p. 481.

Treatment of Nephritis.—Black gives a report of four cases of complication of the kidneys: one of infectious nephrosis, one of lipoid nephrosis, one of acute glomerulonephritis and one of edema with hypertension. In improvement of the function of the kidneys the author states that the cardiac tone should be improved in order to maintain maximum pressure, and dilution of the blood or substance to be filtered through the kidney should be favored. If one assumes that the glomeruli are so engorged that they cannot filter the heavily laden blood, one can at least by a process of dilution approach the proper solution. He uses fluids intravenously and believes that small amounts of dextrose facilitate the problem. He frequently gives from 1,000 to 1,500 cc. of water with from 20 to 50 cc. of a 50 per cent solution of dextrose intravenously; at times, especially if the uremia is due to acute glomerulonephritis, the results are striking. Edema is not a contraindication, especially if ordinary measures have failed in its reduction. He does not favor sweating because only water can be recovered and it is paradoxical to assume a condition produced by concentration of nitrogen waste products due to kidney insufficiency on the one hand and to attempt to increase the concentration by sweating on the other. However, in mild cases sweating dilates the peripheral blood vessels and makes the patient feel better. The same applies to purging.

Tuberculosis of Kidney.—According to Caulk, renal tuberculosis is declining in frequency as a result of the improvement in the early diagnosis and treatment of pulmonary and general tuberculosis and the prevention of massive lesions. Early diagnosis in renal tuberculosis is paramount. The cystoscopic picture is most significant. In unilateral renal tuberculosis, nephrectomy should be performed promptly. Surgery in bilateral renal tuberculosis is indicated only in cases of emergency to relieve toxemia from pyonephrosis or to correct intractable vesical lesions. The immediate relief of symptoms in many of the cases after nephrectomy is due to the removal of a tuberculin reaction created by the products of bacteria, dead and alive, tuberculoproteins, fats and fatty acids. Frequently, the more acute the lesion in the bladder the more

quickly the healing and relief of symptoms following the removal of the diseased kidney. The chance of healing in chronic renal surgical tuberculosis is remote and not comparable to the simple early experimental lesions. The mortality of nephrectomy is exceedingly low. The relief of bladder symptoms may be expected in at least 75 per cent of the cases of unilateral renal disease, instead of an almost positive assignment to invalidism if left to medical care. Ultraviolet irradiation and ventilation to the interior of the bladder aid in the healing of tuberculous cystitis.

Tumors of Kidney.—Burford states that the earliest symptom of most kidney tumors is hematuria and that all cases of blood in the urine should be investigated until the cause is determined; this usually means a cystoscopic examination. Primary carcinoma of the kidney is much more rare and may be of the papillary type originating in the pelvis, or adenocarcinoma originating in the kidney substance. The growth is relatively slow and the bleeding is prone to be more constant and smaller in quantity than in nephroma. These tumors, as do nephromas, tend to metastasize late, the lungs and the glands on the left side of the neck being the two sites of predilection. The author has operated on four patients with primary carcinoma of the kidney ranging in size from a small lemon to a tumor filling half the abdominal cavity. All made immediate recovery but died later of metastases. Adenosarcoma of the kidney is a disease largely of infancy and early childhood. Early diagnosis is the best method of reducing the mortality rate. An attempt at removal of large kidney tumors is good surgery, for metastasis is slow and the kidney capsule holds the tumor for a long time before it ruptures.

Pennsylvania Medical Journal, Harrisburg

36: 1-72 (Oct.) 1932

The Presidential Address. C. Falkowsky, Jr., Scranton.—p. 1.
Present Status of Vaccine and Nonspecific Protein Therapy. J. A. Kolmer, Philadelphia.—p. 9.
Specific Urethritis Treated with Azo Dye. F. S. Schofield, Philadelphia.—p. 15.
Practical Study of Scarlet Fever. T. Melnick, Philadelphia.—p. 18.
Clinical Significance of Fields of Vision. L. Lehrfeld, Philadelphia.—p. 22.
Generalized Actinomycosis with Positive Blood Culture. C. F. Freed and F. Light, Reading.—p. 25.
Methods of Caring for the Discharging Ear. D. Macfarlan, Philadelphia.—p. 29.
Allergy in Relation to Vasomotor Rhinitis. L. Tuft, Philadelphia.—p. 30.
Medicolegal Lights and Shadows. A. D. Wade, Warren.—p. 33.
New Nonsurgical Treatment for Gastric and Duodenal Ulcer: Preliminary Report. L. W. Kohn, New York.—p. 39.

Rhode Island Medical Journal, Providence

15: 175-188 (Nov.) 1932

Chemotherapy of Neurosyphilis. S. H. Epstein, Boston.—p. 175.
Basal Metabolism in Diagnosis and Treatment of Disease. L. I. Kramer, Providence.—p. 177.

Surgery, Gynecology and Obstetrics, Chicago

55: 409-552 (Oct.) 1932

*Mucoid Carcinoma of Gastro-Intestinal Tract: So-Called Colloid Cancer. T. S. Raiford, Baltimore.—p. 409.
Visceral Pain. L. Davis, L. J. Pollock and T. T. Stone, Chicago.—p. 418.
*Anhydremia as Possible Cause of Death in Liver Autolysis. E. C. Mason and C. W. Lemon, Oklahoma City.—p. 427.
Asphyxia Neonatorum: Its Causes and Treatment by Prolonged Artificial Respiration: Report of Sixty-Six Cases. D. P. Murphy, Philadelphia, and J. V. Sessums, Galveston, Texas.—p. 432.
*Tuberculous Bacilluria and Excretion Tuberculosis: Experimental Study. F. Lieberthal, Chicago, and T. von Huth, Budapest, Hungary.—p. 440.
Spontaneous Pyelitis in Rabbit: Ascending Infection of Urinary Tract; Its Relationship to This Disease in Man. H. F. Helmholz, Rochester, Minn.—p. 449.
Hydrogen Ion Concentration Value of Tannic Acid Solutions Used in Treatment of Burns. S. J. Seeger, Milwaukee.—p. 455.
*Benign Angiomatous Tumors of Skeletal Muscles. H. P. Jenkins and P. A. Delaney, Chicago.—p. 464.
Treatment of Carcinoma of Cervix with Small Quantities of Radium. M. Cutler, Chicago.—p. 481.
Technic of Suprapubic Implantation of Radon Seeds in Bladder Carcinoma. B. S. Barringer, New York.—p. 487.
Influence of Gynecologic Conditions on Genito-Urinary Tract as Shown by Simultaneous Injections of Skiodan or Uroselectan (Intravenously) and Lipiodol: Preliminary Report. A Stein and M. Rodgers, New York.—p. 490.
Surgical Treatment of Tuberculosis of Large Bowel. F. W. Rankin and S. G. Major, Rochester, Minn.—p. 494.
Exteriorization and Obstructive Resection of Carcinoma of Sigmoid. W. D. Haggard, Nashville, Tenn.—p. 501.
*Hernia in Infant: Report of Thirty-One Cases. W. J. Blevins, Woodland, Calif.—p. 505.
Resections of Renal Pelvis and Other Plastic Operations for Hydronephrosis: End-Results in Thirteen Cases. W. Walters, Rochester, Minn.—p. 508.
Syphilis of Jejunum: Case Report. H. K. Tuttle, Ancon, C. Z.—p. 518.

Mucoid Carcinoma of Gastro-Intestinal Tract.—Raiford presents a study of 123 cases of mucoid carcinoma of the gastro-intestinal tract. He divides these into two distinct groups, one the true mucoid carcinoma arising as a tumor of mucus secreting cells and the other adenocarcinoma with degeneration, a degenerative product of simple adenocarcinoma. The degree of mucus formation in adenocarcinoma is, roughly, inversely proportional to the grade of the malignant condition. Mucous deposits do not necessarily indicate malignant conditions, as they have been found in benign adenomas and have been produced experimentally in animals. The mortality of adenocarcinoma with mucoid degeneration parallels that of simple adenocarcinoma. The mortality of true mucoid carcinoma is much higher (82 per cent) and in all probability is due to its rapid growth, early metastases, and a tendency to form implantations.

Anhydremia as Possible Cause of Death in Liver Autolysis.—On the basis of their experimental study on five dogs, Mason and Lemon state that the blood studies showed a decrease in plasma volume and that postmortem examination revealed free fluid in the peritoneal cavity. They admit the presence of a gram-positive anaerobic bacillus but they do not believe that it causes the death of the animals by producing a septic peritonitis. They conclude that the liver tissue undergoing autolysis within the peritoneal cavity liberates a substance which causes a chemical peritonitis, which is accompanied by a marked increase in permeability of the abdominal viscera. Free fluid is always present in the peritoneal cavity of the dogs dying from autolysis of liver tissue, the amount of free fluid usually being equal to from one third to one half of the total blood volume. Accompanying the migration of free fluid into the peritoneal cavity there occurs a marked blood concentration. The institution of abdominal drainage, following operation, shortened rather than prolonged the lives of the animals studied. Forcing fluids by mouth and intravenously did not materially lengthen the lives of any animals studied.

Tuberculous Bacilluria and Excretion Tuberculosis.—Leiberthal and von Huth found in their experiments on female rabbits that a physiologic excretion of bacteria by the kidney does not occur. Some bacteria may pass through the kidney and appear in the renal tubules after severe renal damage in the form of blood vessel rupture, severe epithelial degeneration, or glomerulonephritis has been produced by the organisms and their toxins. Tubercle bacilli do not pass through the kidneys, from the blood into the urine, under any circumstances because of the comparatively mild immediate action of that organism on the renal tissues. Tubercle bacilli rarely appear in the renal tubules, and then only as the result of a direct extension of a tuberculous lesion through the wall of the Bowman capsule or the wall of the tubule. A "true" excretion tuberculosis never occurs in the kidney, and a "false" excretion tuberculosis occurs relatively seldom. Tuberculous lesions in the medulla of the kidney are usually hematogenous in origin. Previously induced traumatic, degenerative or inflammatory lesions of the kidney do not make that organ permeable for tubercle bacilli. Tuberculous lesions in the renal parenchyma which do not communicate with the renal pelvis seldom if ever give rise to bacilluria. The kidney has a peculiar immunity to hematogenous infection with tubercle bacilli, because of its copious blood supply and the comparatively large caliber of its blood vessels. Tubercle bacilli which are circulating in the blood tend to pass through the circulation of the kidney to lodge in other organs. Infection of the kidney occurs only if local disturbances in the circulation or the presence of the tubercle bacilli in larger masses which cause embolism (suspended in fat droplets, adherent to débris, or agglutinated masses of bacilli) allow the organism to lodge in the renal tissues. A tuberculous nephritis (a nonspecific inflammatory change in the kidney due to the direct, local action of tubercle bacilli) does not exist.

Angiomatous Tumors of Skeletal Muscles.—Jenkins and Delaney report a case of benign angiomatous tumor of the gluteus maximus muscle of the arterial type and review 256

reported cases, of which they summarize 62 in tabular form. In reviewing the 256 cases, they found the tumor to occur usually before the age of 20 years (79 per cent) and almost always before 30 years (94 per cent). The etiology has not been definitely established; however, a congenital factor has appeared to be of considerable importance, while there may have been a traumatic element in 17 per cent of the cases. The cardinal symptoms were: a mass which grew slowly and was localized in a muscle or group of muscles, usually with normal overlying skin; pain, which was present at some time in the course of the disease (58 per cent); tenderness (29 per cent), and deformity or functional impairment, which was present in about a fourth of the cases. The correct diagnosis was seldom made before operation. The accuracy of the diagnosis was aided by aspiration of blood from the tumor and by the presence of phleboliths in the roentgen examination. The lesion was most often confused with lipoma, sarcoma or cold abscess. The treatment of the condition was practically always surgical excision, which was sometimes technically difficult because of hemorrhage. The tumor occurred most frequently in the extremities, especially the thighs. The quadriceps femoris was the most frequently involved muscle. Grossly it was found to be diffuse most frequently, although some were circumscribed or partially circumscribed. Microscopically it was found usually to have a cavernous structure, although frequently arterioles, veins and capillaries were present and were sometimes the predominating structure. Definite proliferative changes were observed in the endothelium of the vessels and in the supporting tissue in a considerable number of the cases. The prognosis for life is excellent, as there were no deaths reported from the disease or the surgical treatment. Disability following operation was infrequent, and recurrence almost equally rare.

Hernia in Infant.—In 906 consecutive hospital patients, twenty hernias were found by Blevins before these children reached the age of 42 months. In addition to these twenty hernias he observed eleven others within this age range which he briefly reviews. Twenty-six of these children were operated on by radical herniorrhaphy without any mortality and without recurrence in any case. The author believes that all inguinal and femoral hernias persisting over a period of one month should be referred to a surgeon for hernioplasty. If incarceration is noted at any time, immediate operation should be performed, as strangulation might intervene by reason of torsion. A truss is not to be used in any event as the danger attendant on its usage greatly outweighs the advantages that are occasionally derived from it. The true congenital umbilical hernia with abdominal contents in the sac should be referred to the surgeon for operation a few days after birth. The enlarged umbilical ring which protrudes when the child cries should be treated conservatively through the application of a gauze pad held by adhesive plaster. In the event that the ring does not close at the end of six months, the child should be referred for operative procedure. The large hernia in the cretin, which is probably more aptly described as a complete separation of the recti, is not a surgical condition and all treatment should be directed against the primary etiologic factor through the use of thyroid extract.

Virginia Medical Monthly, Richmond

59: 385-446 (Oct.) 1932

Why Is the State of Virginia Interested in Mental Hygiene? W. F. Drewry, Richmond.—p. 385.
Status of the Feeble-Minded and Epileptic in Virginia. J. H. Bell, Colony.—p. 387.
How Physical Handicaps Produce Mental Problems. F. H. Redwood, Norfolk.—p. 389.
Value of Extract of Watermelon Seed in Treatment of Arterial Hypertension. B. P. Seward, Roanoke.—p. 391.
Dietetics in Dentistry and Its Relation to Medicine. F. R. Talley, Petersburg.—p. 398.
Mechanism, Diagnosis and Management of Occipitoposterior Positions of Vertex. R. A. Ross, Durham, N. C.—p. 407.
Control of Typhoid Fever in Virginia. R. K. Flannagan, Richmond.—p. 408.
Rational View of Eczema. L. W. Lord, Baltimore.—p. 412.
Evaluation of Radiation Therapy in Advanced Cancer. C. W. Eley, Norfolk.—p. 415.
Blastomycosis. F. W. Shaw and B. W. Meador, Richmond.—p. 419.
Practical Value of Information Concerning Cerebrospinal Fluid. A. Gordon, Philadelphia.—p. 421.
Use of Anterior Pituitary Substance in Common Baldness: Preliminary Report. T. Kohn, Richmond.—p. 425.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

7: 235-289 (Oct.) 1932

Case of Hemorrhagic Nephritis in a New-Born Baby. C. P. Lapage.—p. 235.
*Experimental Study of Antirachitic Factor in Human and Animal Milks. I. A. Sabri and M. M. Fikry.—p. 239.
Position of Large Intestine in Infants and Its Relation to Constipation. A. K. A. Khalik, H. Erfan and A. Askar.—p. 249.
Specificity of Hemoglobins Including Embryonic Hemoglobin. Hilda Trought.—p. 259.
Vincent's Infection in Childhood. C. E. Kellett.—p. 263.
Use of Radiostoleum and Calcium Salts in Rheumatism. E. C. Warner.—p. 273.
Sinusitis in Childhood. Valentina P. Wasson.—p. 277.
Tuberculous Laryngitis in Children. C. D. S. Agassiz.—p. 287.

Antirachitic Factor in Milk.—According to the experiments of Sabri and Fikry on rats, the results of their experiments agree with those of most other workers that milk, whatever its source, does not contain vitamin D in sufficient amounts to be of practical value in the prevention of rickets. In addition, it has been shown by various workers that irradiation of the milk endows it with antirachitic power. The authors came to a similar conclusion on irradiating milk fat itself. Thus, the child is evidently receiving in his milk supply sufficient amounts of the precursor of vitamin D (or provitamin), which will acquire antirachitic properties when irradiated by exposure of the child to sunlight or ultraviolet rays. It has been shown also that rachitic children are probably receiving a smaller amount of provitamin in their milk supply. The clinical difference between human and cow's milk in their antirachitic power, which has been stated by various authors, cannot be due to any difference in their vitamin D or provitamin content, as the two are present in nearly the same amounts in both milks. It must be ascribed to other factors.

British Journal of Tuberculosis, London

26: 159-216 (Oct.) 1932

Tuberculosis and Temperament. K. H. R. Edwards.—p. 172.
Treatment of Pulmonary Tuberculosis by Light: Phases of Controversy. E. A. Underwood.—p. 178.
*Use of Insulin in Treatment of Pulmonary Tuberculosis. P. Ellman.—p. 187.
The Problem of the Advanced Tuberculous Patient. F. Heaf.—p. 190.

Insulin in Treatment of Pulmonary Tuberculosis.—Ellman outlines the value of insulin as a therapeutic measure in certain selected cases of phthisis to restore normal appetite and combat loss of weight and resistance. It is especially indicated in afebrile, inactive cases of phthisis, when failure to gain weight in a previously robust person persists despite the usual therapeutic measures. No treatment should be undertaken without clinical, radiologic and bacteriologic control. Observations of weight, pulse, blood pressure and temperature should be made when using insulin. Insulin is contraindicated in cases of fever, active disease, hemoptysis, marked hypotension and severe reactions following injections. The author commences treatment with a hypodermic injection of 5 units of insulin twenty minutes before the principal meal. To avoid any risk of hypoglycemia patients should be advised to drink a glass of milk, or take dextrose, and to carry a few lumps of sugar with them, and should they develop any symptoms of hypoglycemia, such as general weakness, listlessness, shakiness, palpitating nervousness, giddiness or sweating, to take a lump of sugar. The injection of 5 units of insulin should be continued daily for the first week. This is increased by 5 units weekly until 30 units is taken as a daily dose for from one to three weeks. The author never exceeds the 30 unit dose.

East African Medical Journal, Nairobi

9: 151-182 (Sept.) 1932

Preliminary Observations on Etiology of Kenya Typhus. H. D. Tonking.—p. 152.
Comparison of Abilities of Races, with Especial Reference to East Africa. R. A. C. Oliver.—p. 160.

9: 183-214 (Oct.) 1932

Comparison of Abilities of Races, with Especial Reference to East Africa. R. A. C. Oliver.—p. 193.
Case of Cardiac Massage. C. V. Braimbridge.—p. 205.

Glasgow Medical Journal

37: 217-288 (Oct.) 1932

Spinal Anesthesia in Obstetrics and Gynecology. D. Baird.—p. 217.
Spinal Anesthesia with Percaine. H. P. Fairlie.—p. 225.
Use of Regional Anesthesia. D. Lamont.—p. 233.
Tuberculosis in Infancy and Childhood. J. W. S. Blacklock.—p. 241.
Notes on Tropical Diseases Sometimes Seen in Home Practice. R. Aird. —p. 254.

Journal of Anatomy, London

67: 1-213 (Oct.) 1932

Chromosomes of Sphenodon Punctatum. R. D. Keenan.—p. 1.
Distribution of Sympathetic Fibers in Extremities. H. H. Woollard and R. Phillips.—p. 18.
Human Pineal Gland and Pineal Cysts. Eugenia R. A. Cooper.—p. 28.
The Bushman Brain. I. Slome.—p. 47.
Cavum Septi Pellucidi. I. M. Thompson.—p. 59.
Mechanostructure of the Pericardium. G. T. Popa and E. Lucinescu. —p. 78.
Abdominal Pregnancy in Animals, with Account of Case of Multiple Ectopic Gestation in Rabbit. Nellie B. Eales.—p. 108.
Roentgenographic Observations of Times of Appearance of Epiphyses and Their Fusion with Diaphyses. H. Flecker.—p. 118.
Unusual Form of Brachyphalangy and Syndactyly, with Double Proximal Phalanx in Middle Fingers. E. A. Cockayne.—p. 165.
Case of Enlarged Parietal Foramina Associated with Metopism and Irregular Synostosis of the Coronal Suture. J. A. Stallworthy.—p. 168.

Journal Obst. and Gynec. of Brit. Empire, Manchester

39: 471-742 (Autumn) 1932

Description of Human Ovum Fifteen Days Old, with Especial Reference to Vascular Arrangements and to Morphology of Trophoblast. N. M. Falkiner.—p. 471.
*Clinical Observations on Antitubercular Vaccination of the New-Born Child with Bacillus Calmette (Guérin). P. Bar.—p. 507.
Method of Rapid Diagnosis of Pathologic Specimens. A. J. Wrigley. —p. 527.
Causation of Onset of Labor: A Suggested Theory. R. A. Gibbons. —p. 539.
Pregnancy in Association with Cardiospasm. F. Roques.—p. 550.
*Gastric Acidity in Emesis and Hyperemesis Gravidarum. D. F. Anderson.—p. 558.
Adenocarcinoma of Vagina. G. I. Strachan.—p. 566.
Dystocia Dyspituitarism. E. A. Daniels.—p. 573.
Ovarian Carcinoma: Case. J. C. Gupta.—p. 580.
Acquired Atresia of Genital Tract: Note of Cases. R. E. Tottenham. —p. 587.
Hemimelus: Case. S. Silverman.—p. 591.
Adenomyoma of Uterus with Tuberculous Infection. D. M. Vaux.—p. 594.
Posterior Pituitary Gland in Pregnancy. R. C. Brown.—p. 596.
Pyemia Following Acute Infective Periostitis of Pubes in a Case of Miscarriage. J. B. Cleland.—p. 599.
Treatment of Varicose Veins During Pregnancy. R. Greene.—p. 601.
Case of Twin Labor in Lion Marmoset. W. L. English.—p. 603.

Antituberculosis Vaccination of the New-Born.—Bar has explored at length the problems which should present themselves to the obstetrician asked to vaccinate a child with BCG. Few of these problems have been finally settled, but in studying them the obstetrician should not ignore the results already obtained. The method is harmless; thousands of vaccinations done in France and elsewhere without a single accident, both on healthy and hereditarily tuberculous children, prove this. Many years of research are necessary to assess the degree of its efficacy. One can say with certainty today that the measure of success depends on the rigor with which isolation, until immunity has been acquired, is carried out and heavy infections avoided.

Gastric Acidity.—Of twenty-eight patients with emesis gravidarum, Anderson found that six had achlorhydria. Of twenty-two patients with hyperemesis gravidarum, ten had achlorhydria, while hyperchlorhydria was present in three. The remainder showed varying degrees of free acid but had not been examined during the period of active vomiting. A group of twenty-eight patients, comprising cases of pyelitis, albuminuria and eclampsia, were examined in respect of their gastric acidity. Patients with pyelitis associated with vomiting exhibited a tendency to hypochlorhydria, but none had achlorhydria. There was no marked incidence of achlorhydria in albuminuria or eclampsia. The incidence of achlorhydria in the total series of seventy-eight cases was 24 per cent. Grouping the cases of emesis and hyperemesis gravidarum (fifty cases), achlorhydria occurred in 32 per cent of them. Approximately 53 per cent of the cases of achlorhydria occurred between the ages of 19 to 25, and 84 per cent between the ages of 19 and 30.

Lancet, London

2: 771-822 (Oct. 8) 1932

Present Position of Sympathectomy. E. D. Telford.—p. 771.
*Treatment of Burns in Outpatients with Reinforced Tannic Acid Dressings. J. H. Hunt and P. G. Scott.—p. 774.
Etiology of Breast Cancer. C. C. Twort and A. C. Bottomley.—p. 776.
Treatment of Pernicious Anemia by Marmite. A. Goodall.—p. 781.
Conservative Treatment of Eclampsia: Report of One Hundred Cases. E. A. Gerrard and R. L. Newton.—p. 782.
Physiology of Proteinuria and Its Clinical Significance. Phyllis M. Tookey Kerridge and L. E. Bayliss.—p. 785.

Tannic Acid Dressings for Burns.—Hunt and Scott offer a series of sixty-three consecutive cases in which a modification of the recognized tannic acid method has been used for the outpatient treatment of burns and scalds. If the crust formed by the recognized method is covered with a dressing and bandage, it tends to soften and become septic and detached. This difficulty has been overcome by reinforcement of the crust, with a thin layer of gauze, gauze and collodion, or collodion alone. The results have been encouraging, especially in burns of the face and hands, which often give so much trouble. Details of the three methods are given. In the majority of second and third degree burns the method of choice is to paint the burned area with a 5 per cent solution of tannic acid in water and to apply a dressing soaked in the same solution. The tannic acid solution is applied with a soft camel's hair brush (¾ inch wide) instead of a spray. No anesthetic is required. Next day when the dressing is removed the burn will be found covered with a thin brown crust, and the dressing is repeated. On the third and fourth day this crust is reinforced with collodion. The surface then remains hard and dry and the crust separates toward the end of the second week, exposing the new epithelium which has grown beneath it. For the first-aid treatment of all burns and scalds the authors use dressings soaked in a 5 per cent solution of tannic acid in water (20 grains [1.3 Gm.] of the powder to an ounce of warm water). Vigorous cleaning and scrubbing are avoided. Softening of an ordinary tannic acid crust, when covered up, is usually thought to be due to diminished evaporation from its surface. Their series of cases suggests that evaporation plays but little part and that the softening is nearly always due to sepsis following mechanical damage, from the rubbing of a dressing. The effect of reinforcement is entirely mechanical. The strengthening is most essential at the edge of the crust where it is in contact with the skin and its organisms; here it is that separation first occurs from the friction of dressings and organisms first gaining a hold. The agents used for reinforcing the crust all help to prevent this separation at the edge, and it is to this that the beneficial effect of reinforcement is due.

"Gann," Japanese J. Cancer Research, Tokyo

26: 253-314 (Sept.) 1932

Case of Chancroid Developing on Wall of Old, Fistulous Osteomyelitic Bone Cavity. D. Yamaguchi.—p. 253.

Japanese Journal of Obstetrics and Gynecology, Kyoto

15: 264-340 (Aug.) 1932

Pharmacologic Investigation of Blood Vessels of Human Placenta. K. Ueda.—p. 264.
Investigation of Placental Ferments in Various Stages of Pregnancy. M. Abe.—p. 284.
Supplementary Study on Permeability of Carbohydrate in Human Placenta. M. Abe.—p. 289.
Physicochemical Change of Blood in Gynecologic Diseases: Part II. Physicochemical Nature of Blood of Patients with Uterine Myoma and Ovarian Cyst. M. Ikeda.—p. 291.
Electric Impulse to Rabbit Uterus, Hypophysis of Which Is Completely Destroyed. H. Morimoto and M. Ikeda.—p. 300.
Biologic Study of Radiosensibility. J. Nakagawa.—p. 304.

Journal of Oriental Medicine, South Manchuria

17: 17-32 (Sept.) 1932

Intestinal Amoebiasis. K. Hiyeda.—p. 17.
Experimental Study on Persistence of Spirochaeta Recurrentis in Brain. H. Hiroki.—p. 21.
Clinical and Experimental Studies on Sodium Thiosulphate Solution as Solvent for Arsphenamine. T. Iwakiri.—p. 25.
Dorsal Musculature of Foot in the Chinese. Y. Liu.—p. 26.
Occurrence of Sternalis Muscle in the Chinese. T. Sakima.—p. 28.
Cysticercus Cellulosus Hominis: Two Cases. K. Kato.—p. 28.
Seroreaction in Treatment of Syphilis. M. Ehara.—p. 29.
Miasmatic Spreading and Prevention of Malaria in Manchuria. S. Nishihori.—p. 30.

Annales de Médecine, Paris

32: 289-384 (Nov.) 1932

Chronic Deforming Arthropathies in Course of Bronchial Dilatation. L. Bernard and M. Lamy.—p. 289.
Malignant Fatal Diphtheria: Importance of Renal Lesion and Azotemia. J. Chalier, Lévrat, Froment and Roman-Monnier.—p. 304.
*Case of Urticaria from Cold: Biologic Study. R.-J. Weissenbach and J.-P. Brisset.—p. 333.
*Lesions of Bundle of His-Tawara. I. Mahaim.—p. 347.
Familial Primary Hypoplasia of Superior Maxilla. M. Villaret and H. Desoille.—p. 378.

Urticaria from Cold.—Weissenbach and Brisset report a case of urticaria from cold in a woman, aged 32. Following the first attack, which occurred at the age of 21, after an exposure to cold, the eruptions appeared with progressively increasing frequency and intensity. After a sojourn of fifteen minutes in a cool atmosphere, an intense pruritus was felt in the cooled parts of the body, followed by the appearance of an eruption, which lasted till about one hour after return to a moderate temperature. It was found experimentally that chilling produced a typical hemoclastic crisis, which reached its maximum in about fifteen minutes, preceding by a few minutes the appearance of the eruption. This led the authors to believe that this case belonged to the group of cases of urticaria from cold due to a reaction of shock. This opinion was supported by the fact that no vasomotor stimuli other than cold produced the urticaria, that the urticaria did not appear if the cutaneous surface which was cooled was small, and above all by a positive Prausnitz-Küstner reaction. The latter means that injection of the patient's serum (taken during exposure to cold) into the skin of healthy individuals results in the production of urticaria when the injected area is cooled. The authors offer the hypothesis that cold provokes the formation of an antigen, which in normal persons is destroyed or assimilated so that no antibody is produced and no urticaria results. In the patient, this antigen is not destroyed or assimilated and stimulates the formation of antibody. The antigen-antibody conflict manifests itself during renewed exposure to cold by appearance of the urticaria. The authors think that the substance produced or liberated by the antibody-antigen conflict is similar to histamine. The vasomotor phenomena caused by the cold and produced at the same time as the shock determine the localization of the urticaria. All therapeutic measures used, including medication affecting the vasomotor system, serotherapy, injections of histamine and habituation to cold, were without results.

Lesions of Bundle of His-Tawara.—In a serial examination of the heart of a patient who had suffered from myocarditis and whose electrocardiogram had shown the deformities of the ventricular complex considered typical of arborization block, Mahaim found lesions completely interrupting both branches of the bundle of His. He also found intact septal connections between the posterior ramifications of the left branch of the bundle of His at their source and the ventricular myocardium of the septum. These septal connections have been seen by the author in many cases. He is of the opinion that, if these connections are constant in man and are always located at the source of the left branch, they offer a new explanation for the mechanism of so-called arborization block. The latter does not correspond to lesions of the arborization terminals but to lesions completely interrupting both branches. He calls the new pathologic combination "missed bilateral block" because there is a complete block at the level of the specific tissue, by section of both branches, without the occurrence of auriculoventricular block. (This was true of the case reported.) The wave of excitation, unable to use the path of the specific fibers, travels over the septal connections of the left branch and descends the ventricular myocardium of the septum. The slowness of the conductibility of the ventricular myocardium compared to the conductibility of the specific fibers of the bundle is translated by the enlargement of the QS interval of the electrocardiogram, typical of the so-called arborization block. These septal connections of the left branch also explain the paradoxical cases of bundle branch block described by Oppenheimer and Pardee and by B. and E. Oppenheimer, in which complete lesion of the left branch corresponds to an electrical ventricular complex with left ventricular preponderance. They also permit explanation of all degrees of enlargement of the QRS complex seen in clinical electrocardiograms.

Archives d'Électricité Médicale, Paris

40: 249-296 (July) 1932

Dielectrolysis. G. Bourguignon.—p. 249.
*New Sign of Death: Diathermic Test. H. Bordier.—p. 273.
Results of Radium Therapy of Cancers of Cervix Uteri (1921-1931). F. Delporte, J. Cahen and F. Sluys.—p. 275.
Radiologic Properties of Latent Tissues. J. Firket and J. Lambert. —p. 281.
Fight Against Cancer in Belgium. Maisin.—p. 286.
Roentgenography and Stereoroentgenography of Thorax by Means of Cardiorespiratory Selector. P. Cottenot.—p. 291.

New Sign of Death: Diathermic Test.—Bordier describes a new method of distinguishing between real and apparent death. A diathermic current of from 1,500 to 2,000 milliamperes is applied to one part of the body; for example, the abdomen and the lumbar region. Just before the current is applied, the temperature at some point distant from the electrodes, as, for example, the mouth or the axilla, is measured. If, after the current has been applied for twenty or thirty minutes, there is no rise in the buccal or axillary temperature, death may be affirmed. If, on the other hand, there is a rise in the axillary or buccal temperature, no matter how slight, it signifies that the circulation is not completely arrested, though the rhythm may be imperceptible, and that death is only apparent and not real. The thermal elevation is due to the heating of the blood and circulating fluids during their passage through the tissues situated between the electrodes. When death is recent and the body has not reached a thermal equilibrium with the surrounding medium, the temperature decreases in spite of the passage of the high frequency current. The author thinks that this test, in addition to its valuable property of demonstrating the persistence of the circulation, no matter how slight it may be, offers a means of reviving persons whose circulation scarcely exists and of preventing that condition from ending in real death. The diathermic current, by means of the intense hyperemia and the heat produced in the tissues, can progressively reestablish a more active circulation and revive the cardiac contractions.

Policlinico, Rome

39: 1645-1684 (Oct. 24) 1932. Practical Section

Clinical Aspects of Wandering Erysipelas. R. Grasso.—p. 1645.
*Technic of Concentration of Tubercle Bacilli in Sputum of Patients with Tuberculosis. E. Nassi.—p. 1649.
Supernumerary Bone in Tendon of Quadriceps: Case. A. Capua.—p. 1652.
Pseudo-Eclampsia Due to Ascaridiasis in First Days of Puerperium. A. Bernardini.—p. 1667.

Concentration of Tubercle Bacilli in Sputum.—Nassi describes his method of isolating tubercle bacilli by means of a solution made of 2 Gm. of magnesium hyperchloride, 6 Gm. of sodium bicarbonate and 1,000 cc. of distilled water. An equal amount of sputum and solution are mixed in a receptacle and slowly stirred with a glass rod for about ten minutes and then poured into a large test tube. The tube is gradually heated in a water bath at from 85 to 90 degrees centigrade for about fifteen minutes and the contents are slowly stirred. The mixture is then poured in a sedimentation cup. The most minute particles tend to drop to the bottom. After three hours the sedimentation is complete. The liquid is then poured out and some of the sediment is smeared on a glass slide. The Ziehl-Neelsen staining method is used with the following modifications: for decoloration, a solution of 4 per cent sulphuric acid which gives a faint rose color and for contrast staining, a solution of well diluted methylene blue (methylthionine chloride, U. S. P.). The author describes another method for quick diagnosis. He makes 10 cc. of an aqueous solution of 15 per cent common gelatin, melted by heating and filtered while still hot. The sputum is heated in a water bath for fifteen minutes, when it becomes one homogeneous mass; 5 cc. of it is poured into the gelatin solution and 5 cc. of ligroine is added. The tube is closed with a rubber stopper and is thoroughly shaken for thirty seconds. In a few minutes the ligroine carries the tubercle bacilli to the top and later the bacilli form a substratum between the gelatin solution and the ligroine. After being placed in cold water or on ice, the gelatin solidifies. The ligroine is then poured off and the bacilli are scraped from the top of the gelatin, placed on a slide and stained. The author states in conclusion that he advocates the first method for its simplicity and the second for its rapidity.

Deutsche medizinische Wochenschrift, Leipzig

58: 1669-1708 (Oct. 21) 1932

Irradiated Ergosterol. A. Windaus and A. Lüttringhaus.—p. 1669.
Danger of Internal Silver Therapy. A. V. Knack.—p. 1672.
*Differences in Course of Dextrose Tolerance Test in Three Structural Types. O. Hirsch.—p. 1675.
Clinical and Histopathologic Aspects of Electrical Injury. S. Jellinek.—p. 1677.
*Causal Therapy of Ulcer of Stomach by Modification of Hydrogen Ion Concentration. E. Behrenroth.—p. 1678.
Technic of Surgical Enucleation of Tonsils in Children in Combination Anesthesia. Hopmann.—p. 1679.
Focal Infection as Cause of General Diseases. Handschuh.—p. 1681.
Observations on Action of Substance from Anterior Lobe of Hypophysis. F. Pendl.—p. 1681.
Hessing's Glue Bandage. G. Schramm.—p. 1682.
Improvement in Storage and Transportation of Urethral Instruments. P. von der Porten.—p. 1683.
Pathogenesis of Diphtherial Circulatory Weakness. U. Friedemann.—p. 1683.

Dextrose Tolerance Test in Three Structural Types.—Hirsch made dextrose tolerance tests on nineteen persons of the pyknic type, on twenty of the athletic type and on eighteen of the leptosomatic type. He detected noticeable differences in the blood sugar curves of these three types. In persons of the pyknic type the increase was great, remained for a considerable time at a maximum and decreased slowly to near the values obtaining during fasting. In the athletic type there was likewise a considerable increase, but the decrease was rapid and even went below the normal value. In persons of the leptosomatic type the apex of the curve was lower than in the other two types and usually decreased more rapidly and farther below the fasting value than in athletic persons. The author recommends that this constitutional behavior should be taken into consideration when tolerance tests are evaluated. He assumes that the varying course of the blood sugar curve in the different types may be due to endocrine factors.

Therapy of Gastric Ulcer by Modification of Hydrogen Ion Concentration.—On the basis of experiences with intravenous injection of calcium in gastric hemorrhages, Behrenroth resorted to intravenous administration of afenil (calcium chloride urea) in patients with gastric ulcer. The injections were made every five days, and case histories show that from eight to ten injections were necessary. In addition to the injections the patients also received the usual dietary treatment, atropine and Carlsbad salt. The injections of afenil did not cause complications, and the only reaction was a slight feeling of warmth during the injections. The general condition, the appetite and the weight of most patients showed a rapid improvement, and in many the hemoglobin values and the erythrocytes also increased. In discussing the mode of action of this treatment, the author points out that its efficacy is probably due to a change in the acid base equilibrium toward the alkalotic side. The superiority of intravenous calcium therapy over the oral calcium therapy is due to the fact that in intravenous injection all the basic calcium ions enter the blood, whereas in oral administration of calcium chloride the salt enters the body as a neutral salt, is eliminated as an alkaline salt and thus leaves acids behind.

Folia Haematologica, Leipzig

48: 145-278 (Oct.) 1932

Classification of Lymphoid Cells in Lymphoid Celled Angina. J. Wajzer.—p. 145.
Spleen Atrophy with Anemia of Character Resembling Pernicious Anemia: Case. G. Bigalke.—p. 157.
*Interpretation of Changes Resulting in Anemia Induced by Intravital Dye, Trypan Red: Experimental Evidence Supporting Monophyletic Theory of the Origin of Blood Cells. J. S. Latta and F. H. Moore.—p. 178.
Results of Animal Experiments with Radiothorium II That Is Used in Treatment of Leukemia. I. Zadek.—p. 210.
Intracellular Precipitation and Impregnation of Hemoglobin in Erythrocytes. J. F. Rinehart.—p. 231.
Acquired Hemolytic Jaundice in Woman Previously Splenectomized for Essential Thrombocytopenia. T. R. Waugh.—p. 248.
*Blood Groups and Diameter of Erythrocytes. L. Friedmann and E. Tschkonja.—p. 261.

Changes in Anemia Induced by Injection of Dye.—Latta and Moore present the results of a series of experiments in which different groups of albino rats were subjected to a varying number of intraperitoneal injections of a toxic acid azocolloidal dye, trypan red, given at twenty-four hour intervals. Changes in the circulating blood and those in the hematopoietic tissues of the red bone marrow and spleen are given and an attempt is made to correlate these changes. Repeated injections of trypan red brought about a marked and progressive anemia, correlated with a gradual rise in the percentage of reticulocytes and possibly a tendency to a decrease in the color index. A marked neutrophilic leukocytosis was exhibited, which reached its peak between the third and fourth injections, the leukocyte count tending toward normal from that time on. Marked qualitative changes were produced in the leukocyte count, segmented neutrophils underwent a gradual decrease, monocytes increased slightly and lymphocytes decreased in proportion to the increase of neutrophils, so that eventually almost complete reversal of the lymphocyte-granulocyte ratio was attained, an increase in the Schilling index then existing. Initial injections were found to be followed by no change in erythropoiesis, or only a slight depression, and by granuloblastic hyperplasia with the beginning of the formation of macrophages from reticular cells and hemoblasts in situ. With added injections greater emphasis is placed on granulopoiesis and macrophage formation, with this divergence of the stem cells and the depressing effect of the dye greatly embarrassing erythropoiesis. The amount of macrophage formation increased just as the number of injections of the dye increased. The amount of erythrocyte destruction noted in the spleen and bone marrow was in direct proportion to the increase in the number of macrophages in these organs.

Blood Groups and Diameter of Erythrocytes.—Friedmann and Tschkonja conducted studies to determine whether the diameter of the erythrocytes is influenced by the race, age, sex or blood group of a person. The tests were made on healthy persons, on 100 children and on 100 adults of both sexes, who were either Georgians, Armenians or Russians. Tabular reports indicate that the diameter of the erythrocytes is not influenced by race, sex or age but that every blood group is characterized by a certain size of erythrocytes. The greatest diameter of erythrocytes was observed in the blood group O (7.17 microns), the smallest in the blood group AB (6.69 microns).

Virchows Archiv f. path. Anat. u. Physiol., Berlin

286: 571-865 (Oct. 13) 1932

Changes in Pulmonary Tissues Produced by Introduction of Colloidal Cholesterol into Blood Stream. G. A. Merkulow.—p. 571.
Pathology of Bronchial Asthma. W. Pagel.—p. 580.
*Involvement of Skin in Miliary Tuberculosis. P. Geipel.—p. 591.
Hematogenic Infection of Liver of Rabbit by Tubercle Bacilli Toxin of R. J. Anderson. H. Guillery.—p. 604.
Culture of Tubercle Bacilli from Blood. H. Popper, F. Bodart and W. Schindler.—p. 615.
*Aspects of Generalized Actinomycosis. K. Fellinger and G. Salzer.—p. 638.
Mycosis Fungoides in Dog with Demonstration of Assumed Pathogenic Agent. D. Wirth and R. Baumann.—p. 651.
Morphologic Changes of Human Hypophysis Following Destruction of Base of Mesencephalon or of Infundibulum of Hypophysis. E. J. Kraus.—p. 656.
Method of Fat Staining of Tissue Cultures. Z. Szantroch.—p. 675.
*Question of Identity of Charcot's and Böttcher's Crystals. M. Bogen.—p. 690.
Reticulosarcomatosis. E. Benecke.—p. 693.
*Aspects of "Retothelial" Sarcoma of Lymph Nodes and of Other Lymphoid Organs. F. Roulet.—p. 702.
Extensive Relapsing Thrombosis of Intestinal Veins in Subacute Sepsis. J. Catsaras and A. Symeonidis.—p. 733.
Chronic Occlusion of Portal Vein. H. Fleischhauer.—p. 747.
Blood Vessels of Periosteum in Inflammatory Changes. H. Naumer.—p. 766.
Dependence of Cardiac Action on Size of Lumen of Vessels. G. Hauffe.—p. 780.
*What Are Argentaffine Cells? H. Hamperl.—p. 811.
Analysis of Interstitial Cells in Testes in E Avitaminosis. A. Juhász-Schäffer.—p. 834.

Involvement of Skin in Miliary Tuberculosis.—Geipel observed an involvement of the skin only in nurslings and in young children. The tubercles were found in the corium and in the adjoining portion of the epidermis and also in the deeper layers of the corium. In older persons the skin is not involved in miliary tuberculosis. The subcutaneous fat tissues are nearly always involved in miliary tuberculosis, in children as well as in adults. The author observed it in thirty cases on different parts of the body. In four patients miliary tubercles were also found in the striated muscles and twice in the muscle fascia.

Generalized Actinomycosis.—Fellinger and Salzer report the clinical history of a man, aged 59, in whom primary pulmonary actinomycosis metastasized by way of the blood stream. Actinomyces could be demonstrated by the culture method not only in the pus of the different abscesses but also in the blood of the cadaver and in the splenic pulp. A review of the literature convinced the authors that this is the only case in which it was possible to detect Actinomyces in the blood. Following the description of the microscopic changes in the different organs, the characteristics of Actinomyces are discussed. The actinomycetes found in the different disease foci all showed the same behavior. It is emphasized that in anaerobic cultures the development was more rapid and more abundant than in aerobic cultures. Then the classification of the ray fungi is discussed and the authors conclude that there can be no doubt that the type observed in the reported case belongs to the actinomycetes. They further call attention to the fact that in the actinomycotic granulation tissues there was a marked formation of giant cells.

Identity of Charcot's and Böttcher's Crystals.—Bogen points out that the Charcot-Neumann-Leyden crystals that occur in the bone marrow, in the spleen and in the sputum of patients with asthma are considered by some investigators as identical with Böttcher's sperm crystals. However, starting from the fact that morphologic identity of two crystals is no proof for identical optic behavior the author made new crystallographic investigations. He found that the Charcot-Neumann-Leyden crystals and the secondary calcium phosphate crystals are identical. Böttcher's sperm phosphate crystals, however, are crystallographically (and with that probably also chemically) not entirely identical with the Charcot crystals.

"Retothelial" Sarcoma.—Roulet calls attention to a former report, in which he differentiated a new form of tumor, the "retothelial" sarcoma, from the common lymphosarcoma. Whereas the lymphosarcoma consists mainly of cells of lymphoid origin, the retothelial sarcoma consists primarily of framework cells, the retothelia; that is, the covering cells of the lattice fiber stroma. But while the earlier observations seemed to indicate that the retothelial sarcomas had a more favorable prognosis than the lymphosarcomas, experiences in the last two years, which are reported in this paper, indicate that the prognosis is not as favorable as was at first believed. The new observations show that retothelial sarcomas may become generalized and that in their first stages of development they have something in common with the hyperplasia of the reticular tissues; namely, proliferation of the reticular cells only. A case of pure hyperplasia of the reticular tissues is compared with a case of generalized retothelial sarcoma, and in connection with this the process of hyperplasia of the retothelial tissues is differentiated from the hyperplasia of the endothelial tissues. It is also pointed out that lymphatic leukemia may concur and may be followed by the tumor-like growth of the reticular cells, so that the assumption seems justified that in abnormal growth processes of the lymphoid tissues a reversion to less differentiated cell forms may take place.

What Are Argentaffine Cells?—Hamperl says that the terms argentaffine or argyrophil cells are used so widely that it seems advisable to determine what is meant by these terms, or what conclusions can be based on the "positive silver reaction" of a cell type. He found that, according to the method employed in staining with silver, a larger or smaller number of cell types prove to be argentaffine. He thinks that to designate a cell type as argentaffine, without mentioning the method that was used in staining, is valueless, because the same type of cell may prove nonargentaffine when another method is employed. For instance, with the Gros-Schultze technic, pigment cells, yellow cells and cells of the suprarenal medulla, of the islands of Langerhans and of the anterior hypophysis are demonstrable; whereas with Masson's method only yellow and pigment cells can be demonstrated. The author discusses eight different methods of staining with silver and reaches the conclusion that the term argentaffine should be avoided. Moreover, since none of the described methods stain only one particular type of cells, it is not possible to base the differentiation of a cell type merely on the outcome of the staining with silver, but it is necessary that all histologically recognizable characteristics, of which staining with silver is of course one of the principal ones, are taken into consideration. This is especially necessary in argyrophil cells of epithelial origin that are outside the epithelial tissues in the stroma of the mucous membrane of the digestive tract, for they may easily be confounded with pigmented cells in the mucous membrane stroma, which are likewise stainable with silver. Further, it is not permissible to infer from an identical silver reaction the identity or close relationship of cells that otherwise differ from one another.

Zeitschrift für klinische Medizin, Berlin

122: 1-306 (Oct. 4) 1932

Influence of Diet on Elimination of Oxalic Acid and on Colloid Protection of Urine in Human Beings. K. Eimer and H. Bartels.—p. 1.
*Carbohydrate Metabolism in Diseases of Anterior Lobe of Hypophysis. H. Lucke.—p. 23.
Course of Functional Disturbances of Liver in Infectious Diseases. H. Vogt.—p. 33.
Behavior of Oncotic (Colloid Osmotic) Pressure in Course of Diseases of Liver. K. Waller.—p. 47.
Histamine Wheal and Methylene Blue Test for Demonstration of Latent Icterus. K. Zink and J. Seide.—p. 52.
Roentgenologic Aspects of Changes of Spleen Following Administration of Epinephrine and Simultaneous Changes in Blood. L. Volicer and S. Vešin.—p. 57.
Observations on Skin Capillaries in Patients with Exophthalmic Goiter. M. Michael and W. Buschke.—p. 83.
*Pathogenesis of Raynaud's Gangrene. O. Gagel and J. W. Watts.—p. 110.
Disease of Myocardium with Disturbances in Cardiac Rhythm in Young Person with Tuberculosis. G. von der Weth.—p. 118.
Electrocardiographic Observations on Patients with Angina Pectoris (Ambulatory Type). S. Goldhammer and D. Scherf.—p. 134.
Stenosis of Pulmonary Artery Caused by Paravertebral Abscess and Its Surgical Treatment. G. Haberler and E. Risak.—p. 152.
Investigations on Water Economy: Hemoglobin and Urine Curves in Kauffmann's Test. K. Brucke.—p. 164.
*Clinical Investigations by Means of Reid Hunt's Reaction. F. Sinek and L. Hartmann.—p. 187.
Investigations on Physiology, Pathology and Pharmacology of Magnesium in Blood. K. Lang.—p. 206.
Investigations on Bromine Content of Human Blood. F. Ewer.—p. 244.
*Thrombocytes in Carcinoma. Charlotte Perl.—p. 253.
Treatment of Certain Forms of Diabetes with Weak Electric Currents. M. Dörle.—p. 257.
Light Susceptibility of Persons with Hypersensitivity of Sympathetic Nervous System and Its Significance for Clinical Aspects of Ulcer of Stomach. F. Ellinger.—p. 272.
*So-Called Anaphylactic Bronchial Asthma. S. Perlroth.—p. 281.
Can Peritoneum Act as Natural Dialysator in Uremia? A. von Jeney.—p. 294.

Carbohydrate Metabolism in Diseases of Anterior Lobe of Hypophysis.—Lucke maintains that so far there are only three disorders that can be traced with certainty to disturbances of the anterior lobe of the hypophysis: acromegaly, hypophyseal dwarfism and hypophyseal emaciation or cachexia. The disturbances of the carbohydrate metabolism in acromegaly, aside from the fact that their course fluctuates and that they may disappear spontaneously, are characterized by the following symptoms: high blood sugar content with and without glycosuria while the stomach is still empty, higher renal threshold for sugar, decreased hyperglycemic reaction to sugar and epinephrine, marked and prolonged hypoglycemic phase following alimentary hyperglycemia, and failure to respond adequately to insulin. The carbohydrate metabolism in hypophyseal dwarfism is characterized by a low blood sugar content while the stomach is empty; the alimentary hyperglycemia is frequently more pronounced than in normal persons, but because the renal threshold for sugar is higher there is either no elimination of sugar or it does not correspond to the degree of hyperglycemia. The reaction to epinephrine is usually within the normal limits; on the other hand, there may be an abnormally strong hyperglycemic reaction to epinephrine. Especially noteworthy is the hypoglycemic phase following a sugar tolerance test or following injection of epinephrine: the blood sugar values may become so low that there is danger of a hypoglycemic shock. Patients with hypophyseal dwarfism also have a pronounced susceptibility to insulin. In regard to hypophyseal emaciation the author states that the carbohydrate metabolism of these patients is the same as that of patients with hypophyseal dwarfism. In hypophyseal emaciation it is important to remember that the insulin tolerance is low and that consequently these patients cannot be subjected to a cure of forced feeding in which insulin is administered. The author concludes that the clinical observations in diseases of the

anterior lobe of the hypophysis indicate that this organ participates in the regulation of the carbohydrate metabolism.

Pathogenesis of Raynaud's Gangrene.—In former investigations, Gagel and Watts were able to show that the cells of the lateral cornu are closely related to the sympathetic nervous system and that their axis cylinder processes pass through the anterior roots of the spinal nerve. Another investigator proved that irritation of the distal portion of the divided anterior root leads to vasoconstriction; that is, the vasoconstrictory fibers pass through the anterior roots. From these observations it may be inferred that the cells of the lateral cornu are centers of vasoconstriction. For this reason the authors decided to search for histologic changes in the cells of the lateral cornu and in those of the ganglions of the sympathetic nerves in disorders in which angiospasms or other disturbances of the innervation of the vessels play a part. They made such investigations on the spinal cord and on the ganglions of the sympathetic nervous systems of a patient whose disorder had been diagnosed as Raynaud's gangrene and who had died with the signs of cardiac weakness. Besides the spinal cord the authors examined the stellate ganglion of both sides and the ganglions of the sympathetic nerves to the seventh thoracic ganglion. The material that on macroscopic examination revealed no pathologic changes was fixed in alcohol and stained according to Nissl's method. Histologic examination of the ganglions of the sympathetic nerves did not reveal pathologic changes that could be considered as the cause of Raynaud's gangrene. The more surprising were the changes in the spinal cord. The cells of the lateral cornu presented inflation of their bodies, central dissolution of Nissl's granules and accumulation at the periphery of the cells, also shrinking, hyperchromatosis and marginal location of the cell nucleus. These changes were observable in nearly all cells of the lateral cornu, from the distal half of the eighth cervical segment to the second lumbar segment. All other cells of the spinal cord were free from pathologic changes. The authors conclude that the changes in the cells of the lateral cornu are an essential etiologic factor in the development of symmetrical gangrene.

Clinical Investigations by Means of Reid Hunt's Reaction.—Sinek and Hartmann made the Reid Hunt (acetonitrile) test on 108 patients with various disorders. In patients with exophthalmic goiter the reaction was always positive. The intensity of the reaction did not generally correspond to the type and the severity of the symptoms but there was a certain proportionality between the reaction and the pulse frequency and the eye symptoms. In persons with a hypersensitive sympathetic nervous system the reaction was positive in approximately 80 per cent, but strongly positive reactions were rare in these cases. In sthenic as well as in asthenic patients with diabetes mellitus the Reid Hunt reaction was positive in 75 per cent. Strongly positive reactions were more frequent in the asthenic type than in the sthenic type. The positive outcome of the reaction could not be explained by a thyroidal behavior. In most of the patients with endocrine disturbances such as myxedema, acromegaly and adiposogenital dystrophy the reaction was negative; in a case of Addison's disease there was a weakly positive reaction. In uremia and in bronchial asthma the reaction was always positive. A weakly positive Reid Hunt reaction was occasionally present in other disorders without signs of a hypersensitive sympathetic nervous system. Thus the Reid Hunt reaction corroborates the clinical observation that the occurrence, the type and the intensity of thyrotoxic symptoms are dependent not only on the secretion of the thyroidal hormone but also on other constitutional factors.

Thrombocytes in Carcinoma.—Perl states that most textbooks on hematology now adhere to the opinion of Hayem, who had detected increased thrombocyte values in patients with cancer. Only during the last few days of life and in cases of bone metastasis have low values of thrombocytes been reported. The presence of a large number of cancer patients induced the author to investigate whether those conditions are typical or not. In thirty-three patients she counted the thrombocytes according to Fonio's method and according to Lampert's method. In the majority of cases she found the values according to Lampert higher than those according to Fonio; only in two cases of thrombopenia were the values about the same. She recommends Lampert's method because of its greater simplicity. In most cases of carcinoma examined by her the thrombocyte values were low but still within normal limits. She also found that extensive bone metastasis does not necessarily lead to thrombopenia. In none of the patients was a marked increase in thrombocytes observed. Consequently the author thinks that the reports in the literature about an increase in thrombocytes are not generally valid.

So-Called Anaphylactic Bronchial Asthma.—Perlroth emphasizes that bronchial asthma is an allergic disease and that the term anaphylactic cannot be applied to bronchial asthma. To make this clear he defines the terms anaphylaxis, allergy and idiosyncrasy, and stresses particularly the difference in symptomatology between anaphylactic shock and asthma. He accepts an inferior constitution, which becomes manifest in an allergic diathesis as the main factor in the etiology of bronchial asthma. He therefore considers an antiallergic treatment in the form of specific desensitization as the best therapy of allergic bronchial asthma, particularly in young persons. He thinks that the allergen-free chamber, although it has no real therapeutic value, is helpful in the recognition and differentiation of the specific allergens and in the course of the treatment.

Zentralblatt für Chirurgie, Leipzig

59: 2673-2736 (Nov. 5) 1932. Partial Index

*Possibility of Treating Hemolytic Shock Result of Blood Transfusion in Light of Experimental Work. E. Hesse and A. Filatov.—p. 2674.
Measures to Reduce Incidence of Thrombo-Embolism in Operation on Varicose Veins. J. Vigyázó.—p. 2681.
Unusual Result of Muscle Tear. C. Hammesfahr.—p. 2684.
Hesse's Symptom in Retroperitoneal Tumors. A. Zaiceva.—p. 2685.
*New Disease of Skeletal System. H. R. Paas.—p. 2689.
Treatment of Compound Fracture of Patella. H. Boit.—p. 2694.

Hemolytic Shock in Light of Experimental Work.—Hesse and Filatov point out the utterly bad prognosis of severe hemolysis resulting from blood transfusion. While they believe that death in these cases is due to the loss of renal function, they reject on the basis of their histologic studies the purely mechanical explanation according to which renal capillaries become occluded by emboli and renal tubules by hemoglobin crystals and destroyed erythrocytes. Filatov had demonstrated in a previous work that anuria of hemolysis was caused by the spasm of renal arteries. By sectioning the splanchnics and denervating the kidneys he had proved that the spasm was of central origin. He concluded that the broken down hemoglobin caused a powerful irritation of the subthalamic region and therefore of the vasoconstrictors. Shock and arterial spasm lead to suspension of renal function with resulting albuminuria and hemoglobinuria. In their animal experiments the authors studied the effect of injection of hemolyzed and of incompatible blood on the blood pressure and the kidney volume by means of oncographic studies. In some of the animals they denervated the kidneys. The blood pressure fell and the kidney volume diminished. Denervation prevented shrinkage of the kidney volume only when it was total. A better means to counteract the arterial spasm was found in a new transfusion of compatible blood. They therefore recommend that, in a case of hemolysis consequent on blood transfusion, a fresh and massive new transfusion of compatible blood be done with as little loss of time as possible. A universal donor, usually available in large institutions, could be utilized, or, better still, one from group A or B. They advise against the kidney decapsulation method of Bancroft for the reason that at best only a partial denervation is obtained thereby. They suggest, however, that, if a new transfusion fails to give results, one may resort to the severing of the sympathetic renal nerve fibers of one kidney.

New Disease of Skeletal System.—Paas describes a skeletal deformity in a man, aged 31, which, according to him, does not resemble any of the types described heretofore. The patient had a bilateral coxa plana and valga, a double patella on each side, shortening of the middle and end phalanges of the hands and feet, marked deformities of both elbow joints, scoliosis, and spondylitis deformans of the lumbar vertebrae. The study of the six surviving sisters disclosed that one sister had identical bone and joint deformities, and a double patella on one side. Another sister, now dead four years, apparently fitted into the same picture. The author concludes that this is a new type of skeletal disease developing during growth and

affecting particularly the epiphyses of the bones of the extremities. Both sexes are predisposed. The condition is familial and apparently hereditary.

Zentralblatt für Gynäkologie, Leipzig

56: 2513-2576 (Oct. 15) 1932

*Indications for Vein Ligation in Pyemia of Genital Origin. C. Clauberg.—p. 2514.
*New Hormonal Pregnancy Reaction in Rabbits. H. Hofmann.—p. 2534.
Effect of Pituitary Anterior Lobe Hormone in Urine of Pregnant Women on Ovary of Adult Mouse. H.-U. Hirsch-Hoffmann.—p. 2538.
Roentgen Control of Madlener's Operation of Tube Compression. H. Fuchs.—p. 2542.
Unusually Large Meckel's Diverticulum in New-Born Complicating Labor: Case. I. Voncken.—p. 2544.
Purposeful Dilatation of Cervical Canal. H. Keckeis.—p. 2548.
Congenital Occurrence of Premature Climacteric Without Cessation of Function. A. Hirschberg.—p. 2550.
Injuri s to Genitalia in Coitus. F. J. Bilenko.—p. 2551.

Ligation of Vena Cava in Pyemia of Genital Origin.—Clauberg, in discussing Martens' postulate with regard to puerperal and postabortive sepsis, namely, that vein ligation be resorted to after the first or second chill, points to the results of conservative treatment as reported in the figures of Schröder and Stoeckel from the Kiel clinic. These authors showed 68.5 per cent of cures from conservative treatment of the type of cases in which Martens would have resorted to ligation. This compares more than favorably with the results obtained with vein ligation. He feels that, while the principle of ligation is correct, the indications of Martens are too arbitrary and premature. According to him a chill does not always signify an extension of the infectious process. As is known, chill may be produced by parenteral introduction of albumin, by breaking down of albumin or by blood transfusion. It is therefore difficult to tell when the veins are involved. An expectant, conservative method of treatment of puerperal or abortion sepsis, with as few examinations as possible, is advised. Vein ligation is indicated when signs of general damage, in the absence of signs of extension of local process, are evident. Because localization of the thrombus is uncertain, the vena cava is ligated at times with both spermatic arteries. The author resorted to this procedure in five cases; three of the patients recovered and two died. Because of the grave symptoms presented by the three patients who recovered, he feels that the operation was life saving.

New Hormonal Pregnancy Reaction.—Hofmann's new hormonal pregnancy reaction differs from the original Aschheim-Zondek test in that he uses blood serum instead of urine. The idea of using serum instead of blood came to him at the next to the last congress for obstetrics and gynecology in Germany when a case was reported in which the Aschheim-Zondek test was several times negative in spite of a pregnancy in the fourth month, which was later proved by an abortion. In this case it was assumed that a hormonal blockage in the kidney was the cause of the negative pregnancy reaction, and so the author decided to try the use of blood serum for the pregnancy test. Another factor that induced him to try blood serum was that blood can be withdrawn at any time, while, if urine is used, only the morning urine is suitable, a factor that usually retards the completion of the test by as much as twenty-four hours. Rabbits were used as test animals because efforts to complete the pregnancy test in less than four days had led several authors to use rabbits, whose ovulation mechanism differs from that of mice, so that the test can be completed in a shorter period. In order to eliminate certain sources of error involved in the rabbit test, such as pseudo-estrus, infantilism, malformations or dermoid cysts, an exploratory laparotomy is performed to inspect the ovaries of the animals immediately before the test. The technic of the test is as follows: Twenty-five cubic centimeters of blood, which may be withdrawn from the patient at any time, is centrifugated and the serum shaken with ether. A female rabbit, weighing not less than 2,300 Gm., is laparotomized and the ovaries are inspected. Then approximately 13 cc. of serum is slowly injected into the marginal vein of the ear. If the animal does not tolerate it well, the injection should be interrupted and continued about an hour later. Twenty-four hours later the ovaries are inspected and the presence of blood clots indicates gravidity in the woman from whom the blood specimen was taken. The author employed the method successfully in twenty-five cases and he admits that such a limited number does not warrant a final evaluation; but he thinks that if further tests corroborate his results this pregnancy test will be more rapid than any other and will at the same time be exact. In a postscript he states that Brown in America has employed a similar method with the difference that he injected smaller quantities of serum (only about 3 cc.). The author thinks that if such a small amount is injected the reaction is not sufficiently exact.

Finska Läkaresällskapets Handlingar, Helsingfors

74: 713-768 (Sept.) 1932

*Melanuria and Hepatargia. R. Ehrström.—p. 713.
Paratyphoid Epidemic Due to Bacillus Paratyphosus Breslau. O. Sievers.—p. 723.
Tumor and Inflammation in Merkel's Diverticulum. R. Björkstén.—p. 734.

Melanuria and Hepatargia.—Ehrström describes a case of melanuria in subacute hepatitis, with death due to hepatargia, and cites an analogous instance reported by Peters. These cases, he says, show that melanuria is not alone pathognomonic for melanosarcoma but may be a sign of marked liver insufficiency. Abderhalden's observation of polypeptides, built up of tryptophan and proline, in melanin substances, seems to afford an explanation of the origin of melanuria in fatal insufficiency of the liver.

Hospitalstidende, Copenhagen

75: 1095-1122 (Sept. 15) 1932

Physiologic Basis for Climacteric Psychoses and Neuroses and Folliculin Therapy with Hormone Analysis. T. Kemp, K. Pedersen-Bjergaard and G. E. Schrøder.—p. 1095.
*On Congenital Esophageal Atresia with Esophagopharyngeal Fistula, Together with Remarks on Synchronism in Origin of Malformations (C'cn.). J. Ipsen, Jr., and H. Okkels.—p. 1113.

Congenital Esophageal Atresia with Esophagopharyngeal Fistula.—The histologic investigations of Ipsen and Okkels indicate that the atresia is primary, the esophagopharyngeal fistula resulting from a secondary growth of the esophagus into the trachea. They offer an hypothesis setting the teratogenic termination point of the esophageal anomaly and of the malformations which frequently occur with it at the middle of the second month. They assume that at this time the embryo is exposed to an injurious influence, possibly temporary, and are convinced that the causes of malformation are both exogenous and endogenous and that under special conditions the causes may act side by side.

Ugeskrift for Læger, Copenhagen

94: 963-982 (Oct. 6) 1932

*Tubercle Bacilluria and Renal Tuberculosis. T. Eiken.—p. 963.
Use of Internal (Oral) Agents in Gonorrhea. V. Genner.—p. 967.
Case of Secco Intoxication. T. Dalsgaard-Nielsen.—p. 969.

Tubercle Bacilluria and Renal Tuberculosis.—Eiken reports two cases with symptoms suggesting renal tuberculosis, in each of which tubercle bacilli were repeatedly found in the urine from one kidney, especially on cultivation on Petroff's substrate and inoculation in guinea-pigs. Macroscopic and microscopic examination of the excised kidney in each case revealed only simple inflammatory or degenerative changes. He assumes the condition to have been a tuberculous nephritis, which can be viewed as an early stage of chronic-ulcerous renal tuberculosis. The prognosis for this stage, he says, is hardly as unfavorable as commonly thought, and demonstration of tubercle bacilli in the urine from one kidney is not an absolute indication for nephrectomy.

94: 1005-1030 (Oct. 20) 1932

Treatment of Pulmonary Tuberculosis with "Sanocrysin." K. Faber.—p. 1005.
*Congenital Cataract in Volkmann Family. C. Rasmussen.—p. 1007.
International Tuberculosis Conference in The Hague. K. Faber.—p. 1012.
Prof. H. Møllgaard's Report at Tuberculosis Conference.—p. 1013.

Congenital Cataract in Volkmann Family.—Rasmussen presents the genealogical table of six generations of this family, comprising 246 persons. In this number there are 51 cases of cataract (23.6 per cent), 37 (30.6 per cent) among the 121 women, 21 (16.8 per cent) among the 125 men. In the branch completely accounted for to date there are 29 cases (42.6 per cent) among 68 persons, 18 (52.9 per cent) among the 34 women and 11 (32.4 per cent) among the 34 men.